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XVIII. 1906.

WEST RIDING COUNTY COUNCIL.



EIGHTEENTH
ANNUAL REPORT
OF THE
County Medical Officer,
1906.

Including an Abstract of the Annual Reports of the Medical
Officers of Health for the Sanitary Districts
within the Administrative County.

*Printed by Order of the West Riding Sanitary Committee,
9th September, 1907.*

WAKEFIELD :

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P R E F A C E .

For several years I have felt the desirability if possible of changing the form of Part II of this report, so as to devote a few pages to each individual district of the Riding, and attempting to give therein a condensed account of its local sanitary circumstances. This method is adopted by some County Medical Officers with good results, but as we have 160 different districts to deal with, I find myself unable to present the resulting mass of information except on the topical system as heretofore.

This report is therefore made up of four parts, as follows :—

- PART I. Summary of the Work of the County
Medical Officer's Department ... pages 1 to 13
- PART II. Abstract of the Annual Reports of
Local Medical Officers of Health
pages 14 to 58
- PART III. Report of the Bacteriological
Laboratory pages 59 to 70
- PART IV. Statistical Addendum, including
three tables folded in at the end, giving
the Vital Statistics of each individual
District pages 71 to 77

It should be stated that for the internal use of my Department and the Council, every local report is summarised in detail, and our office records for over ten years constitute a unique bureau of information concerning the sanitary status of every district in the Riding.

JAMES ROBT. KAYE,
County Medical Officer.

Wakefield,
August, 1907.

SUMMARY shewing the principal general items
of the Vital Statistics, etc., for 1906,
contained in this Report.

| | | | |
|---|-----|---------------------|-------------------|
| Area of the Administrative County | ... | ... | 1,673,473 acres |
| Population, estimated to middle of 1906 | ... | ... | 1,475,951 persons |
| Number of Sanitary Districts (1906) | ... | 131 Urban, 29 Rural | = 160 |

| | | | | Year 1906. | | Average of previous five years. |
|---|-----|-----|-----|------------|-----|------------------------------------|
| Birth Rate | ... | ... | ... | 27·0 | ... | 28·3 |
| Death Rate | ... | ... | ... | 15·4 | ... | 16·0 |
| Zymotic Death Rate | ... | ... | ... | 1·9 | ... | 1·8 |
| Phthisis Death Rate | ... | ... | ... | 0·9 | ... | 1·0 |
| Respiratory Death Rate | ... | ... | ... | 2·3 | ... | 2·6 |
| Infantile Mortality, <i>i.e.</i> , Number of deaths under one year per 1000 births. | | | | 136 | ... | 143 |

PART I.

SUMMARY OF THE WORK OF THE COUNTY MEDICAL OFFICER'S DEPARTMENT.

The work of the Department during 1906 must be disposed of very briefly, not because the material is scanty, but because its greatly enlarged scope renders it impossible to go systematically into details without occupying vastly more time and space than an Annual Report demands.

The year 1906 was the first year during which the staff included two fully qualified medical assistants to the County Medical Officer. Both these gentlemen (Drs. Robinson and Lyster) were also trained bacteriologists, and the arrangement was made that they should share between them the charge of the laboratory, and alternately assist generally and in the outdoor inspection of midwives and schools. In the second Quarter of the year, Dr. Lyster found himself unable to forego the opportunity of becoming Medical Officer of Health for his native district, and the vacancy thus created on our staff was promptly filled by the equally fortunate selection of Dr. W. Sisam.

With these greater facilities the work accomplished has increased correspondingly, as may be gathered from that portion which lends itself to statistical expression; for example, the samples examined in the laboratory numbered 4,642 in 1906 as against 3,003 in 1905, while the number of visits to midwives were 1,068 as compared with 208. In looking over my own records for the year, one striking feature appears to be the increase in the number of occasions on which my attendance was required at Committee Meetings, Conferences, Public Inquiries and other official gatherings. These have absorbed some part of the day on 62 occasions during the year. Other engagements fulfilled by me outside Wakefield numbered 173, while the assistant medical officers were away on some 260 occasions.

The following paragraphs will give some idea of the lines on which the work runs, and the extent to which it has progressed during the year. Reference will also be made in Part II. to additional items of work, while Part III. contains a detailed account of the laboratory accomplishments for which Dr. Robinson and Dr. Sisam, and the laboratory staff, deserve every credit. The clerical and inspectorial staffs have also performed their duties most satisfactorily.

Reports and Papers.—Besides the five General Reports and the Annual Report presented in 1906, the following prints were submitted to the Committee during the year :—(1) Report on the Sanitary Survey of

the Sandal Urban District, (2) Ditto for Wakefield Rural District, (3) Report on the Bristol Congress of the Royal Sanitary Institute, (4) Report on the Prevention of Pulmonary Tuberculosis by other means than Sanatoria. I also prepared, with the approval of the Committee, a considerable amount of literature for outside distribution, including pamphlets on "How to feed the Baby," Suggestions for the Construction and Reconstruction of Cowsheds (reprinted), Rules for Milkers, Common Ailments of School Children, Instructions to Midwives in cases of Puerperal Fever. At the Congress on Infantile Mortality (referred to elsewhere), I read a paper on Premature Births, and before the Society of Medical Officers of Health I gave an address on Sanitary Proverbs.

During the year the issue of the Monthly Notification Summary was maintained, involving the tabulation of some 2000 returns, and 278 special reports.

Meetings, Conferences, &c.—For record purposes it may be mentioned that the following Meetings and Conferences were attended by the County Medical Officer during 1906:—Sanitary Committee 8, Sub-Committees 13, County Council 4, Education and other Sub-Committees 13. Conferences or preliminary meetings relating thereto were attended on the following subjects:—Infantile Mortality, National Conference in London, and some preliminary meetings; Royal Sanitary Institute, Congress at Bristol; National League for Physical Education and Improvement, Conference at Leeds; Yorkshire Joint Committee for Investigating Milk Contamination, several meetings at Leeds; also conferences on School Hygiene, Hospital Administration, Trade Effluents, Treatment of Mental Defectives.

Local Government Board Inquiries.—The following table shows the Inquiries held during 1906 with regard to sanitary matters in the West Riding:—

| Date. | Sanitary District and <i>Locality</i> . | Subject. | Amount. | Result. |
|---------|--|-----------------------------------|---------|--------------------|
| 25.1.06 | Settle R. ... | Isolation Hospital .. | £ 6,500 | Sanctioned |
| 22.3.06 | Dewsbury Joint Hospital District | Purposes of Isolation Hospital | 5,000 | Part sanctioned |
| 5.4.06 | Hipperholme ... | Sewerage ... | 2,550 | Sanctioned |
| 18.4.06 | Horsforth ... | Water Supply ... | 4,646 | Sanctioned |
| 19.4.06 | Settle R. <i>Austwick</i> ... | Sewerage and disposal | 3,000 | Sanctioned |
| 19.4.06 | Halifax R. <i>Norland</i> ... | Sewerage ... | 550 | Sanctioned |
| 20.4.06 | Hemsworth R. <i>North Elmsall</i> ... | Sewerage & disposal | 94 | Sanctioned |
| | <i>South Elmsall</i> ... | | 34 | Sanctioned |
| | <i>South Kirkby</i> ... | | 732 | Sanctioned |
| 25.4.06 | Shepley & Shelley Joint Sewerage Board | Sewerage and disposal | 3,400 | Part sanctioned |

| Date. | Sanitary District and <i>Locality</i> . | Subject. | Amount. | Result. |
|----------|---|---|------------|--------------------|
| 26.4.06 | Harrogate and Knaresbro' Joint Isolation Hospital District | Completing and Fur- nishing of Hospital | £ 3,000 | Part sanctioned |
| 4.5.06 | Kiveton Park R. <i>Woodsetts</i> ... | Sewerage and disposal | 500 | Sanctioned |
| 17.5.06 | Ardsley East and West ... | Sewerage ... | 180 | Sanctioned |
| 17.5.06 | Todmorden B. ... | Sewerage and disposal | 22,000 | Sanctioned |
| 5.6.06 | Bolton-on-Dearne | Sewerage and disposal | 7,500 | Part sanctioned |
| 21.6.06 | Featherstone ... | Sewerage ... | 3,365 | Sanctioned |
| " " | " ... | Water Supply ... | 1,330 | Part sanctioned |
| 4.7.06 | Darfield ... | Sewerage and disposal | 1,500 | Sanctioned |
| 5.7.06 | Denby and Cum- berworth ... | Water Supply ... | 2,100 | Sanctioned |
| 9.7.06 | Mirfield ... | Street Improvement | 235 | Sanctioned |
| " " | " ... | Depot purposes ... | 1,149 | Sanctioned |
| 11.7.06 | Skelmanthorpe ... | Sewerage and disposal | 5,640 | Sanctioned |
| 22.8.06 | Bingley ... | Sewerage ... | 5,211 | Referred back |
| 7.9.06 | Tadcaster R. <i>Old Manston,</i> <i>Austhorpe</i> ... | Water Supply ... | 283 | Pending |
| 13.9.06 | Ripon R. <i>Bishop Monkton</i> | Sewerage and disposal | 2,350 | Referred back |
| 14.9.06 | <i>Markington</i> ... | Sewerage and disposal | 1,630 | Sanctioned |
| 4.10.06 | Kiveton Park R. <i>Dinnington</i> ... | Sewerage and disposal | 6,700 | Referred back |
| | Rotherham R. <i>Laughton-en-le-</i> <i>Morthen</i> ... | Sewerage and disposal | 2,550 | Pending |
| 5.10.06 | Doncaster R. <i>Baztry</i> . | Sewerage and disposal | 950 | Sanctioned |
| 6.10.06 | Penistone . | Sewerage and disposal | 1,700 | Sanctioned |
| 9.11.06 | Thornhill ... | Sewerage ... | 2,477 | Pending |
| 9.11.06 | Ripon R. <i>Kirkby Malzeard</i> | Sewerage and disposal | 800 | Sanctioned |
| 27.11.06 | Horsforth ... | Sewerage and disposal | 15,635 | Pending |
| 27.11.06 | Hemsworth R. <i>Great Houghton</i> | Sewage Disposal ... | 1,820 | Part Sanctioned |
| 28.11.06 | Holme ... | Sewage Disposal ... | 350 | Sanctioned |
| 5.12.06 | South Rotherham, etc., Joint Hos- pital Committee | Completion of Hos- pital and purchase of site for S.P. Hospital | 1,500 | Pending |

Parliamentary Work, Etc.—None of the Private Bills of 1906 necessitated active opposition from the Sanitary Department. The two Public Bills mentioned in my last Annual Report again received attention, viz. :—The Alkali Works Bill and the Tuberculosis (Animals) Bill. The former became law without acceptance of the County Council's desire for recognition as an Authority entitled to lodge complaints. The other Bill with respect to compensation for slaughtered animals was dropped.

Sale of Food and Drugs Acts.—The total number of samples analysed during 1906 within the County Council jurisdiction under the Sale of Food and Drugs Acts was 2801 or at the rate of one sample for every 474 inhabitants. It is generally calculated that adequate protection of the food consumer requires the analysis of at least one sample per annum for every 500 of the population.

The following table shows the number of samples taken and found adulterated in the West Riding jurisdiction during the last 10 years :—

RECORD OF SAMPLES FOR TEN YEARS, 1897–1906.

| Year. | TOTAL SAMPLES SUBMITTED BY | | | Total Examined. | Total Adulterated. | Percentage Adulterated. |
|-------|----------------------------|-----------------------|------------------------|--------------------|-----------------------|----------------------------|
| | County Council. | Local Authorities. | Private Purchasers. | | | |
| 1897 | 2227 | 208 | 1 | 2436 | 82 | 3·4 |
| 1898 | 1980 | 209 | — | 2189 | 89 | 4·1 |
| 1899 | 1619 | 256 | 2 | 1877 | 139 | 7·4 |
| 1900 | 2202 | 267 | 2 | 2471 | 135 | 5·5 |
| 1901 | 2247 | 407 | — | 2654 | 193 | 7·3 |
| 1902 | 2330 | 343 | — | 2673 | 151 | 5·6 |
| 1903 | 2303 | 265 | — | 2568 | 114 | 4·4 |
| 1904 | 2310 | 284 | — | 2594 | 81 | 3·1 |
| 1905 | 2329 | 342 | 2 | 2673 | 129 | 4·8 |
| 1906 | 2367 | 432 | 2 | 2801 | 122 | 4·3 |

The Public Analyst's printed reports to the Council contain full particulars of the character of the samples submitted, but it may be well to give here a few general remarks on the results of the year 1906.

MILK SUPPLY.—Of the total samples examined 1190 or 42 per cent. consisted of milk, as being the article of universal consumption which is most liable to adulteration. The results were as follows :—

Genuine ... 1129 or 94·9 per cent.

Adulterated ... 61 or 5·1 per cent.

Looking further into the nature of the adulteration we find that 24 or 2·0 per cent. of the samples had suffered the addition of water, 23 had undergone abstraction of a portion of the fat, and 14 had received a dose of "preservative." In one of the cases this consisted of formaldehyde but

in the other 13 instances boric acid was the material used, in varying proportions up to 5 grains per pint. No prosecutions were undertaken during the year with respect to preservatives in milk, but letters of caution were written to vendors and the Committee decided to issue a notice as suggested by the Board of Agriculture intimating that in future legal proceedings will be taken. In cases of adulteration by added water 13 milk sellers were taken into Court and the fines imposed averaged 25/- each case. It is to be feared that fines of this character have little deterrent effect on people who find that their customers will pay for milk with over 11 per cent of added water which was the average adulteration in the cases referred to.

Still less success has attended our prosecutions when the offence is confined to the abstraction of fat. On this account during 1906, it was only possible to take into Court one case out of 23 of this kind and in that case no conviction was obtained. Unfortunately it is true that a cow will occasionally, and under special conditions, yield milk which falls below the limit of fat, and this is the defence sometimes put forward even in flagrant cases of deficiency of fat in the mixed milk of a herd. The legal minimum of 3·0 per cent. fat is apt to be wrongly regarded as a "standard" and any deficiency is too readily overlooked. It is a mere matter of arithmetic to prove that a deficiency of 0·5 per cent. is a greater loss to the consumer than would be the addition of 15 per cent. of water to a milk which had already been reduced to the legal minimum. I have worked out from the Analyst's Certificates the average composition of the milk samples purchased during 1906 in each of the 9 Inspectors' Districts, and the results show that in each quarter of the year and in every district the figures are well above the minimum. The general averages were as follows:—

| | Milk Fat. | Solids other than Fat. |
|--|---------------|------------------------|
| Legal minimum | 3·0 per cent. | 8·5 per cent. |
| West Riding Samples— | | |
| Average including adulterated samples | 3·6 per cent. | 9·1 per cent. |
| Average excluding adulterated samples | 3·7 per cent. | 9·2 per cent. |

OTHER FOODS AND DRUGS.—Butter is another important food which has received considerable attention during 1906, and here again the legal position is very unsatisfactory. Of the 609 samples submitted 21 or 3·5 per cent. were returned as other than genuine. Slight excess of water or of salt was the objection in six cases while in the other 15 cases the character of the essential butter-fat was in question. In four of these the article was not butter at all, but margarine, while the other 11 presented characters suggestive of the admixture of foreign fats in various proportions. Convictions were obtained in three of the last named class, but in most of the other cases of suspicious fat the analyst found himself compelled to certify in such guarded language that no successful action was possible. This position came about in consequence of instances where butter which

appeared to be adulterated with other fats was proved to be the product of cow's milk the latter having an abnormal character due to some peculiarity of condition, feeding or environment.

Among other classes of foods an adulterated sample was an extreme rarity during 1906, in fact if we exclude milk, butter, spirits and spirituous drugs then the proportion of samples adulterated is only just over one per cent.

During the year the work of the nine inspectors was conducted on systematic lines under my direction, and the following table shows the number of samples submitted from each district.

QUARTERLY RECORD OF SAMPLES TAKEN DURING 1906.

| DISTRICT. | INSPECTOR. | SAMPLES ANALYSED DURING 1906. | | | | |
|---|---------------------|-------------------------------|-----------------|----------------|-----------------|--------|
| | | First Quarter. | Second Quarter. | Third Quarter. | Fourth Quarter. | TOTAL. |
| Barnsley ... | J. H. Bundy ... | 63 | 55 | 49 | 76 | 243 |
| Central ... | F. S. Turner ... | 65 | 81 | 57 | 81 | 284 |
| Harrogate ... | H. Gamble ... | 70 | 63 | 55 | 69 | 257 |
| Mirfield ... | H. Newbould ... | 57 | 68 | 68 | 52 | 245 |
| Pontefract ... | H. F. Wilkinson ... | 55 | 65 | 25 | 83 | 228 |
| Rotherham ... | J. Wilson ... | 100 | 52 | 69 | 53 | 274 |
| Shipley ... | J. Duce ... | 73 | 52 | 53 | 74 | 252 |
| Skipton ... | A. Randerson ... | 78 | 80 | 79 | 44 | 281 |
| Sowerby ... | E. Bell ... | 72 | 68 | 74 | 89 | 303 |
| Total Samples taken by County Inspectors ... | | 633 | 584 | 529 | 621 | 2367 |
| Local Authorities ... | ... | 86 | 98 | 100 | 148 | 432 |
| Private Purchasers ... | ... | — | 2 | — | — | 2 |
| Total Samples Analysed ... | | 719 | 684 | 629 | 769 | 2801 |

I have recently had occasion to draw attention to some striking variations in the results achieved in the several districts,—some inspectors having systematically a greater proportion of adulterated samples than are discovered in other districts. This is a matter which will receive further consideration and it may be necessary to suggest an interchange of inspector's districts for Food and Drugs purposes or some arrangement for purchasing samples through a third person who is unknown to the traders.

Chemical Laboratory.—The total number of samples of drinking-water received or collected for chemical analysis during the year was 105. This considerable falling-off in numbers became necessary in

consequence of increased work in other directions rendering it impossible for us to encourage the receipt of water samples in such numbers as heretofore. There is, however, no retrograde step in this so far as the public are concerned, because arrangements have been made whereby any Local Sanitary Authority can obtain a report on a sample of drinking-water for a nominal fee of 6s. to the Public Analyst. The samples dealt with in my department have been chiefly in connection with special questions such as the determination and recording of plumbo-solvent ability, or of the efficacy of remedial treatment. Of the 105 samples examined 62 were concerned with the lead question and 43 were for general sanitary analysis.

Bacteriological Laboratory.—A total of 4642 specimens was dealt with during 1906, exceeding the previous year's record by over 50 per cent. The increase was noticeable in all departments of the work but especially in the "diphtheria" and "miscellaneous" sections. The latter group includes 21 examinations in connection with anthrax, and 17 in connection with water supplies suspected of having given rise to cases of enteric fever. The numbers have also been swelled by the microscopic work initiated by the Department in connection with the medical inspection of school children on special occasions: thus, of the diphtheria specimens, 325 were collected directly by the staff of the County Health Department during investigations into outbreaks at schools.

The detailed report on the work of the laboratory will be found appended hereto (see page 59), from which may be obtained some particulars of the results arrived at in the various branches.

Isolation Hospitals.—Although no new hospital districts were created during 1906, there was ample work for the Hospitals Sub-Committee, who met six times during the year, and dealt with 34 important matters. I regret to say that these included a considerable number of applications for additional loans, the effect of which will be to increase the cost per bed of Institutions erected in recent years at the order of the County Council. It is very unfortunate that we have no close check on the zeal of Hospital Authorities as regards expenditure, and by the time the application comes to us for a further loan it is usually impossible to refuse it without placing the Local Committee in an awkward position. The County Council in lending the money for the original construction of a Hospital, always satisfy themselves, as far as possible, on every point of efficiency and economy, but there is no system of oversight while the building is being erected, and before long a second loan is required for additional work which has already been put in hand or contracted for. These supplementary loans render it desirable to have a reconsideration of policy and a settling of fresh instructions to officers in regard to hospital schemes.

There are now only three of the Hospital Committees whose buildings are not in existence, and these have all been the subject of enquiry during the year, viz. :—(1) The Wakefield and District Joint Smallpox Committee, (2) The Rawmarsh Hospital Committee, (3) The Sedbergh Hospital

Committee. As regards the first-named the details of the plans have given rise to considerable discussion. With regard to Rawmarsh, the Local Committee in June desired the rescission of their constitution in order that they might become merged in a neighbouring Hospital combination, but subsequently they decided to proceed alone. The Sedbergh Authority have got to the stage of negotiating for a chosen site after having expressed doubts as to the necessity of any Hospital for the district.

Difficult problems have been submitted to the Committee in connection with the existing hospitals, and sanction has been sought for improved schemes of heating, lighting, water supply, etc., requiring careful consideration of the circumstances in each case.

As to the use which has been made of the isolation hospitals during the year, reference must be made to the statistical tables at the end of this report and also to the figures on page 34. It may be mentioned that in one of the hospital districts a constituent Sanitary Authority, reviewing an extensive prevalence of Scarlet Fever, expressed the opinion that the institution had failed in its purpose. Upon investigation, however, it was clear that without the hospital the position would have been much worse, while it might have been much better if the hospital had been supported by complete and systematic measures of prevention outside the institution.

Another newly formed Hospital Committee, before proceeding towards the erection of a hospital, drew attention to the change of opinion which is said to be occurring in certain quarters regarding the utility of isolating scarlet fever. This drew from the Local Government Board a statement that they "do not assent to the proposition that scarlet fever may be disregarded when provision is made for isolating in hospital the infectious fevers of a district."

Nurses Exchange.—The system which was proposed by me, and adopted in a modified form at the end of 1905, has proved of more limited usefulness than was expected of the complete federated scheme. During 1906, we received 30 applications to borrow nurses through the medium of the "Exchange," but unfortunately only about one-third of these could be supplied. As I stated in my last report the "Exchange" will become impossible if each institution reduces its permanent staff to the minimum, and relies on borrowing an extra nurse when required.

Prevention of Consumption.—Under this heading in previous annual reports, I have traced the various steps taken by the County Council in regard to the prevalence of pulmonary tuberculosis, including the passing of a byelaw prohibiting spitting, and the decision to erect a sanatorium. The byelaw has scarcely yet been enforced and the sanatorium seems as far off as ever. Many sites have been considered by the Committee, some quite unsuitable, and others more or less satisfactory, though perhaps not perfect. At the beginning of 1906, when the Committee reported that they had been unable to find a suitable site,

the County Council instructed them to “pursue their consideration of what means may be adopted to combat the ravages of consumption in the West Riding administrative area.” After considering several more suggested sites, the Committee directed the County Medical Officer to report fully on *means other than sanatoria* for combatting the disease. Accordingly, I presented at the June meeting a statement of the measures which it would be possible to take apart from the provision of a sanatorium, and I would again point out that, valuable as I still regard the possession of such an institution, there are other non-institutional measures available which are by no means secondary in importance, and which would still be advisable even if the sanatorium existed. After considering my report, the Committee decided to recommend (1) the better enforcement of the byelaw against spitting, (2) the opening up of relations with the General Hospitals and Infirmaries throughout the Riding with the object of providing suitable instruction and assistance for consumptive out-patients, (3) the urging of all Sanitary Authorities in the Riding to adopt such of the following means as may be appropriate in their respective districts:—

“(1) By instituting a system of Voluntary Notification of Pulmonary Tuberculosis, and following up notified cases by the following steps:—

- (a) Visit of enquiry as to environment at home and at work.
- (b) Giving of advice against spread.
- (c) Periodical disinfection of apartments, bedding, clothing, &c.
- (d) Prevention of overcrowding.
- (e) Enforcement of ventilation.
- (f) Removal of insanitary conditions generally.
- (g) Continued oversight of case so as to secure disinfection of apartments after removal or death.

(2) By advising needy patients *in an advanced stage of the disease* by some measures as follows, assisted by local philanthropy or otherwise:—

- (a) Isolation of such patients in spare wards of hospitals or other suitable places.
- (b) If such patient be not isolated, some of the following steps might be taken:—
 - (i) Removal of children
 - (ii) Provision of extra relief or nourishment in poor cases.
 - (iii) Provision of spittoons, paper handkerchiefs, rags, disinfectants.
 - (iv) Visitation by official or lay visitors.

(3) By increased supervision of general sanitation, including:—

- (a) General distribution of information to householders, employers, &c., as to the nature of the disease, its mode of dissemination, and the conditions favourable and inimical thereto.

- (b) Systematic inspection of dwellings, &c., with a view to securing better conditions of ventilation, prevention of overcrowding, removal of insanitary conditions arising from dirt, damp, and defects of structure or of drainage.
- (c) Closer supervision of milk and food supplies.
- (d) Frequent disinfection of enclosed places of public resort, public vehicles, &c., where spitting may have arisen.

It will be seen that during 1906 no actual progress was made towards the erection of a West Riding Sanatorium.

Education Department.—The year 1906 was the first complete year during which the services of the Health Department were fully at the disposal of the Education Authority under the arrangements arrived at between the two Committees. It is impossible to chronicle the details of the year's work, but one or two points may be referred to, and I think I may say that the general scheme has worked smoothly, economically, and efficiently, within the assigned limits. Certainly it has demonstrated that whilst the Education Department must have a medical staff, there is every advantage in centring it in the Health Department where similar interests are already under our care in every part of the Riding. Of course, with the present arrangement it is not possible to set up any complete system of medical supervision of schools, but the following notes will show that some little progress has been made in that direction.

The number of schools visited and reported on during the year was 78. In most instances this has included a medical survey of the scholars, some 16,000 of whom have been examined in more or less detail. Each initial visit also comprises a sanitary investigation of the school itself, and a record of its recent health history.

Cases specially referred to the County Medical Officer for medical examination and report were 146 in number, viz :—

- 41 Mentally defective scholars, &c.
- 20 Backward scholars.
- 12 Teachers, Candidates, &c.
- 73 Absentees.

In practically all of these cases it was necessary to make a special journey to the home of the examinee, and the drawing up a report on some of the cases was a matter requiring most careful consideration in view of the possible consequences. With regard to defective and epileptic children, I am asked to make a formal certificate under the Act to the effect that a particular child is incapable of deriving benefit from attendance at an ordinary school, but would be benefitted by attendance at a special school for defectives. A good proportion of the children submitted to me have reached an age (say 13) when the benefits of such special education are scarcely likely to be commensurate with the outlay, and in some cases, whilst granting the formal certificate, I have felt it my duty to add “not a hopeful case.”

In the examination of absentees, also, a difficult position often arises owing to the production of a certificate from a local practitioner purporting to justify absence from school on the ground of some ailment. The facility with which in some places an intending absentee can obtain such a certificate is a matter which requires amendment, though I am pleased to say that I have found the local practitioners usually most reasonable when a case of this kind has been brought to their notice.

The prevalence of infectious sickness in schools has been on numerous occasions the subject of advice to local officers, and of investigations either on the spot or in the laboratory. In this connection it has already been mentioned that no less than 325 specimens were directly collected by the staff of the Health Department for examination in the laboratory with the object of detecting carriers of the diphtheria infection.

But perhaps the most numerous investigations have been with regard to the ringworm among the scholars,—a most persistent parasite affection (chiefly of the scalp). This disease has been found to be widely prevalent in West Riding schools, and as it is decidedly contagious we have had recourse to excluding those children found to be suffering. Unfortunately when excluded from school there is no guarantee of a speedy recovery, for the disease frequently requires such continued treatment that the average parent will not persevere with it. The consequence is that some children have been excluded for many months and are still away, while some have only been re-admitted to the school when the disease had naturally died off, after having run a very long course.

This long duration of Ringworm means serious interference with education, but it also means that it would be unjustifiable to permit affected children to attend school, and for half a year to distribute the ringworm parasite to other children. As soon as the legislature gives to the Local Education Authority the power to take steps “for the health and physical condition of the children,” this difficulty could be solved by a daily anointment of the affected heads, and the wearing of suitable scalp-covering in school.

The whole question of the medical supervision of schools, especially in relation to the prevention of infectious disease, is one of great difficulty not only to the teachers and managers, but also to the Local and County Health Departments. In most districts the Medical Officer of Health takes a generous view of his responsibilities and exercises a lively interest in the school welfare. Absentees on account of sickness are regularly notified to him to enable him to take such preventive action as he may deem necessary in accordance with the General Order of the Local Government Board. With regard to the minor infectious diseases, however, this control is not always as effective as might be desired, owing to the impossibility of the Medical Officer devoting a sufficient amount of time to the work in the absence of any special remuneration. To improve the conditions in this respect it was thought desirable to interest the Head Teachers in matters concerning the hygiene of school ailments, and with that object, a course of lectures was given during 1906, by the Medical Staff of this department on the “Common Ailments of School

Children.” Altogether 96 Lectures were given at 24 centres. attended by a gross total of 2591 Teachers. One of the lectures was concerned with the important subject of eyesight, and a scheme was drawn up for the practical testing, and recording, of the children’s condition as regards sight.

Midwives Act.—I submit below a table of statistics concerning the notices received from Midwives, and the number of inspections and investigations made by the staff of this department since the active administration of this Act commenced.

| | 1904. | 1905. | 1906. |
|--|-------|-------|-------|
| Notifications of Sending for Medical Aid | 6 | 158 | 401 |
| Notifications of Death of Child ... | 3 | 32 | 75 |
| Notifications of Death of Mother ... | — | 3 | 9 |
| No. of Inquests reported ... | — | 11 | 30 |
| Notifications of Still-Births ... | 8 | 140 | 351 |
| Notifications of Puerperal Fever ... | — | 13 | 43 |
| No. of Visits paid to Midwives ... | 8 | 208 | 1068 |
| No. of Midwives on County Council List | 176 | 855 | 838 |

The figures for 1906 show a very great increase on previous numbers, but in making the comparison it must be remembered that the work was not completely organised during the first two years when the majority of the midwives were ignorant of their new obligations. Hence it must not be thought that the deaths, still-births, etc. in 1906 were really more than usual, but simply that more midwives realised the necessity of reporting them to the Local Supervising Authority. Now that all the women are more or less conversant with the Rules it may be expected that statistics for future years will afford some valuable comparisons.

As regards the 401 records of sending for medical aid, 85 of these were occasioned by the need of medical assistance in difficulties of labour, 281 were on account of the subsequent condition of the mother, and in 35 cases the condition of the child was the cause of sending for the doctor. The Rules require that copies of these notices be sent promptly to the County Council, but this is often overlooked, and I find that in 79 instances it took more than two days for the information to reach me.

The 75 deaths of infants were not by any means the total death-rate, these being only the instances where death occurred when no medical man had been in attendance. Most of these deaths took place immediately after delivery, and I am satisfied that in the majority of cases no skill could have saved these lives. With respect to the deaths of mothers, each case is investigated by the Department, and special action taken when necessary. Of the 9 which were recorded during the year, 3 were certified as due to Puerperal Fever, 2 to Heart Failure, 2 Convulsions, 2 Hæmorrhage. In only one of these cases was an inquest necessary, and the midwife concerned was not held to be responsible in any way.

All the 43 cases of puerperal fever have been carefully investigated, and special attention paid to the disinfection of the midwife before attending other patients. It should be explained that only 18 of these 43 cases were reported to me by midwives, the remainder being discovered by the

Department on following up the records of puerperal fever in the Monthly Notification Summary. Nothing apparently can be done to remedy this failure on the part of the midwives in not reporting cases, because I find that when a doctor is called in to a case which he notifies as puerperal fever, he generally omits to specifically inform the midwife of his diagnosis. In every case of fever which has come to my knowledge during the year I have been able to arrange with the local medical officer for the necessary disinfection, and there has been no example of a midwife communicating the disease after such disinfection. In one instance a second case had occurred in the midwife's practice before we were made acquainted with the first, the midwife being eventually struck off the Roll for infringements of the Rules. Altogether 7 cases of infringements were brought before the Committee during the year. In 3 instances the midwife was strongly cautioned by the Chairman, while the other 4 were reported to the Central Midwives Board, with the result that their names were removed from the Roll.

Large numbers of minor infringements were observed and corrected without being reported formally to the Local Supervising Authority. The age and type of midwife at present on our books is such that a lenient administration is imperative as regards matters of merely formal importance, or their ranks would be decimated with no one to take their places. Indeed the outlook, as it is, deserves the serious consideration of the Authorities with special reference to the question of providing new midwives as the present ones retire or are removed by death. The mean age of the women on our list is 57 years, and as no young ones are being added, it is obvious that an unworkable state of things is approaching with increasing rapidity. Already we have considerably fewer midwives on our list than when we started, and unless something is done there will be a serious scarcity in 1910 when the deferred clause of the Midwives Act comes into full operation, and absolutely debars any but certified women from habitually assisting at confinements. I strongly recommend the organising of some form of training to enable younger women to obtain the certificate of the Central Midwives Board, which can now be secured only by examination. No person is allowed to sit for this examination until she has produced evidence on the following points:—

(1) She must have, under supervision satisfactory to the Central Midwives Board, attended and watched the progress of not fewer than 20 labours, making abdominal and vaginal examinations during the course of labour and personally delivering the patient.

(2) She must have, to the satisfaction of the person certifying, nursed 20 lying-in women during the 10 days following labour.

(3) She must have attended a sufficient course of instruction (not less than three months) in the subjects embraced by the examination.

I believe that several County Councils are taking steps to promote the training and certification of midwives in accordance with the above scheme, and there is need for provision of this kind to be made in the West Riding.

PART II.

ABSTRACT OF ANNUAL REPORTS.

The Reports of local Medical Officers received and reviewed for this Abstract are as follows.—

| | | | | |
|-------------------------|-----|-----|-----|-------|
| From Municipal Boroughs | ... | ... | ... | 14 |
| „ Urban Districts | ... | ... | ... | 117 |
| „ Rural Districts | ... | ... | ... | 29 |
| | | | | <hr/> |
| | | | | 160 |
| | | | | <hr/> |

Each report is required to comprise or be accompanied by five elaborate tables of Vital Statistics as prescribed by the Local Government Board, and also a Home Office table regarding Factories and Workshops, and a County Council Form dealing with general matters of local sanitary administration.

The collection and summarizing of such a mass of intricate details is a matter of considerable labour, and, as I have pointed out before, one part of the work cannot be commenced until the last report is received, and the last discrepancy put right. This year it was the end of July before that stage was reached, owing to the unfortunate delays of one or two reporters.

The general character of the reports received indicates a distinct upward movement as regards the care and attention bestowed by Medical Officers of Health on this part of their duties, and one cannot withhold admiration for the spirit which in many cases prompts the busy practitioner to devote himself so thoroughly to public health work for which his salary is often no proper consideration. No less than 136 of the reports were received in type as suggested by the Local Government Board and the County Council, and it would be well if the remaining Authorities would consider the advisability of printing. There is little inducement to an officer to prepare a careful review of the district's sanitary status, when he knows that he himself represents a good proportion of the readers. In this connection it is surprising to find that Dr. Williamson's excellent report on Sandal is only typewritten, where it was formerly printed. A few of the reports, on the other hand, consist of meagre documents with the minimum of information.

As regards statistics, I have been able, by dint of some little worrying of my colleagues, to secure complete figures for every district in the Riding, and these will be found in the large tables folded at the end of this report. I should like here to express my sincere thanks to the various local Medical Officers of Health for the kind and obliging manner in which they have assisted me in this work.

Population.—The population of each district as at the middle of 1906, has been calculated in the usual way, with allowances made, as far as possible, for any exceptional local movement. In this way, I arrive at a figure for the Administrative County of 1,475,951, which I think may be regarded as a fair estimate. The details are given in Table I at the end of this report, but the totals may be stated here as follows:—

| | Estimated popula- tion at the middle of 1906. | Area in Acres. | Persons per Acre. |
|-----------------------------------|---|-------------------|----------------------|
| Urban Districts (131) ... | 1,128,799 | 365,716 | 3.09 |
| Rural Districts (29) ... | 347,152 | 1,307,757 | 0.27 |
| West Riding Administrative County | 1,475,951 | 1,673,473 | 0.88 |

Births.—Once again the birth-rate breaks the record, but only by a fraction, that is to say the 39,840 births which occurred in the Administrative County during 1906, were equal to 27.0 per thousand of the population, the lowest previous rate having been 27.1 in 1905. If the Urban Districts of the Riding be considered alone, the birth rate for 1906 was only 26.4, as against 26.7 for the Urban Districts in the previous year. I do not propose to discuss the probable causes or indications of this decline which seems to have become a regular feature of the country's statistics. Looking at Table I (see end) it will be seen that, as usual, very high birth-rates prevailed in many industrial centres, chief among which are the mining districts of Kiveton Park (44.5), Cudworth (43.2), Wombwell (42.2), Monk Bretton (41.6), Royston (41.5), Featherstone (41.3), Worsborough (40.6). On the other hand there are some remarkably low birth-rates which cannot be explained by the absence of a vigorous industrial population, *e.g.*, Todmorden (18.1), Hebden Bridge (16.0), Sowerby Bridge (16.3), Sowerby (13.0), Hipperholme (14.8), Clayton (16.1), and many others. One cannot help noting, although it is difficult to establish any connection, that practically all the places with a surprisingly low birth-rate are supplied with drinking water of a very soft character, and occasionally capable of dissolving lead from the service pipes. Of course this circumstance can have no connection with the universal decline in fecundity, but it is just possible that where it is superadded to the causes operating generally its effect is sufficient to make those districts specially noticeable as above.

Still Births.—At the National Conference on Infantile Mortality a resolution was passed in favour of the compulsory notification of still births. Until that comes about, no reliable statistics are available, and it is only by inference that one concludes that they are tending to increase in numbers. From the imperfect figures which I have collected for 1906, it seems that 58 still births occurred for every thousand live births in the Administrative County. It is mentioned in the Wakefield report that 47 still-born children were interred in a single churchyard in the City during 1906.

Deaths.—The death-rate of 15.4 per thousand was lower than the average of the previous five years and, indeed, only a fraction above the lowest ever recorded for the Administrative County (15.2). The tables folded at the end of this report give the rates for each district in the Riding, and a very useful purpose will be served if they encourage comparison between districts, and the raising of questions locally as to the causes of relatively high death-rates. For example, at Whitwood a death-rate of 22.1 was largely due to the 47 deaths of babies under one year of age, and at Heckmondwike and

Rawmarsh a similar cause operated unduly in raising the general mortality. Among other places with somewhat noticeable death-rates were Liversedge, Barnsley, Birstal, Dewsbury, Dodworth and Holmfirth.

Dr. Johnstone, of Ilkley, presents some interesting tables shewing the great saving of life in comparison with previous decades, while Dr. Scatterty, of Keighley, points out that "a low death rate may be due to other causes than absence of unhealthy conditions among the people," meaning, of course, the declining birth-rate. At Shelf, Hipperholme, Hunsworth and Midgley there were more deaths than births during 1906.

The following table, dealing with the Administrative County, enables a comparison to be made with the nine previous years as regards the deaths from the principal zymotic diseases. These comparisons will be discussed later on in this report under their respective headings.

WEST RIDING ADMINISTRATIVE COUNTY, 1897-1906,—Annual birth and death rates per thousand of the population (from the County Medical Officer's annual abstracts).

| | 1897 | 1898 | 1899 | 1900 | 1901 | 1902 | 1903 | 1904 | 1905 | 1906 |
|-----------------------|------------|------------|------------|------------|------|------|------------|------------|------------|------------|
| Birth-rate ... | 30·5 | 29·7 | 29·0 | 28·9 | 29·5 | 28·7 | 28·5 | 27·7 | 27·1 | 27·0 |
| Death-rate... | 17·0 | 17·7 | 16·9 | 18·3 | 16·9 | 15·8 | 15·6 | 16·5 | 15·2 | 15·4 |
| Infant Mortality† ... | 151 | 165 | 152 | 160 | 157 | 138 | 142 | 147 | 133 | 136 |
| Zymotic Death-rate | 1·94 | 2·21 | 1·93 | 2·17 | 2·14 | 1·53 | 1·49 | 2·19 | 1·45 | 1·93 |
| Small Pox ,, | 0·00 | 0·00 | 0·01 | <i>nil</i> | 0·00 | 0·01 | 0·03 | 0·12 | 0·02 | <i>nil</i> |
| Scarlet Fever ,, | 0·22 | 0·16 | 0·17 | 0·21 | 0·14 | 0·10 | 0·13 | 0·14 | 0·21 | 0·16 |
| Diphtheria & Croup | 0·16 | 0·18 | 0·21 | 0·32 | 0·25 | 0·17 | 0·17 | 0·17 | 0·17 | 0·18 |
| Typhus Death-rate | <i>nil</i> | <i>nil</i> | <i>nil</i> | <i>nil</i> | 0·00 | 0·00 | <i>nil</i> | <i>nil</i> | <i>nil</i> | <i>nil</i> |
| Enteric Fever ,, | 0·19 | 0·25 | 0·22 | 0·19 | 0·24 | 0·13 | 0·14 | 0·17 | 0·14 | 0·11 |
| Continued ,, | 0·00 | 0·00 | 0·00 | 0·00 | 0·00 | 0·00 | 0·00 | 0·00 | <i>nil</i> | 0·00 |
| Measles ,, | 0·32 | 0·41 | 0·26 | 0·54 | 0·18 | 0·62 | 0·20 | 0·49 | 0·18 | 0·35 |
| Whooping C. ,, | 0·22 | 0·29 | 0·25 | 0·23 | 0·27 | 0·22 | 0·32 | 0·33 | 0·17 | 0·23 |
| Diarrhoea ,, | 0·83 | 0·92 | 0·81 | 0·67 | 1·04 | 0·28 | 0·50 | 0·77 | 0·56 | 0·90 |
| Respiratory ,, | 3·07 | 3·28 | 2·91 | 3·23 | 2·64 | 2·83 | 2·58 | 2·65 | 2·57 | 2·25 |
| Phthisis ,, | 1·30 | 1·33 | 1·23 | 1·14 | 1·00 | 0·99 | 1·02 | 1·01 | 0·94 | 0·95 |

† Deaths under one year per 1000 births.

For the sake of continuity the next three tables are given in the form adopted in past reports. They show the benefits which the Rural Districts of the Riding possess over the Urban Districts. When we remember that none of our Urban Districts are really large centres with crowded city conditions we must ascribe the advantage of the Rural communities largely to their healthier habits of life.

| | Annual Rates per 1,000 of the Estimated Population. | | | | | Infant Mortality (Deaths under one year per 1,000 Births) |
|---|---|-------------|---------------------|----------------------|-------------------------|--|
| | Birth-rate. | Death-rate. | Zymotic Death-rate. | Phthisis Death-rate. | Respiratory Death-rate. | |
| (1) Urban Districts (131) in the West Riding | 26·4 | 15·3† | 2·01 | 1·02 | 2·30 | 139 |
| (2) Rural Districts (29) in the West Riding | 29·3 | 14·8† | 1·70 | 0·77 | 2·13 | 126 |
| (3) West Riding Administrative County ... | 27·0 | 15·4 | 1·93 | 0·95 | 2·25 | 136 |

† Excluding Asylum deaths.

TABLE SHEWING THE COMPARATIVE INCIDENCE OF THE PRINCIPAL ZYMOTIC DISEASES IN THE URBAN AND RURAL DISTRICTS RESPECTIVELY—
(Death-rates from the County Medical Officer's Abstracts.)

| | 1903 | | 1904 | | 1905 | | 1906 | |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| | Urban Districts. | Rural Districts. | Urban Districts. | Rural Districts. | Urban Districts. | Rural Districts. | Urban Districts. | Rural Districts. |
| Small Pox ... | 0·03 | 0·02 | 0·15 | 0·01 | 0·02 | 0·00 | <i>Nil</i> | <i>Nil</i> |
| Scarlet Fever ... | 0·12 | 0·15 | 0·14 | 0·18 | 0·22 | 0·16 | 0·15 | 0·19 |
| Diphtheria & Croup | 0·16 | 0·22 | 0·17 | 0·17 | 0·17 | 0·19 | 0·19 | 0·15 |
| Typhus ... | <i>Nil</i> | <i>Nil</i> | <i>Nil</i> | <i>Nil</i> | <i>Nil</i> | <i>Nil</i> | <i>Nil</i> | <i>Nil</i> |
| Enteric Fever ... | 0·15 | 0·11 | 0·16 | 0·17 | 0·15 | 0·10 | 0·12 | 0·08 |
| Continued Fever .. | 0·00 | <i>Nil</i> | 0·00 | <i>Nil</i> | <i>Nil</i> | <i>Nil</i> | 0·00 | <i>Nil</i> |
| Measles ... | 0·23 | 0·11 | 0·50 | 0·47 | 0·19 | 0·15 | 0·39 | 0·25 |
| Whooping Cough.. | 0·35 | 0·20 | 0·32 | 0·36 | 0·17 | 0·20 | 0·24 | 0·17 |
| Diarrhœa ... | 0·53 | 0·42 | 0·81 | 0·67 | 0·57 | 0·56 | 0·92 | 0·86 |
| Total Zymotic Death-rate ... | 1·57 | 1·23 | 2·25 | 2·03 | 1·49 | 1·36 | 2·01 | 1·70 |
| Do. for Administrative County generally ... | 1·49 | | 2·19 | | 1·45 | | 1·93 | |

Number of Deaths Recorded at certain Age-periods 1906.

| | Under 1 Year. | 1 to 5 Years. | 5 to 15 Years. | 15 to 25 Years. | 25 to 65 Years. | 65 and upwards. | All Ages. |
|-------------------------------------|------------------|------------------|-------------------|--------------------|--------------------|--------------------|--------------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Urban Sanitary Dis- tricts (131) | 4145 | 2120 | 695 | 780 | 5356 | 4096 | 17192 |
| Rural Sanitary Dis- tricts (29) | 1267 | 561 | 212 | 186 | 1452 | 1421 | 5099 |
| Total Administrative County | 5412 | 2681 | 907 | 966 | 6808 | 5517 | 22291 |

Infantile Mortality.—Since my last Annual Report was written there has been held a National Conference on this subject, with a view of inciting active steps throughout the land for the removal of those causes of Infant Mortality which are preventable. Good results will undoubtedly follow from this successful Conference, but meanwhile, in 1906, we had in the Administrative County 5412 deaths registered under the age of one year. This works out at 136 for every thousand births, as compared with 133 in the previous year which, it will be remembered, was the lowest ever recorded for the Riding.

An analysis of these death returns will enable us to see at what points we have exceeded the previous low record, and will also indicate the directions in which remedial work can best be pursued. First, as to the ages at death; more than one-fifth of these infant deaths occurred within the first week of life (chiefly due to “premature birth”), and more than one-third failed to complete their first month. As I have previously pointed out the great majority of these very early fatalities can scarcely be ascribed to lack of proper care and attention on the part of the mothers. Their sacrifice is due largely to ante-natal conditions which, like the still-birth question, cannot be fully discussed here.

In 1906 we had fewer deaths under three months of age than in the previous year, but at ages between 3 and 12 months our mortality was greater. This was brought about by (1) diarrhoeal diseases which accounted for 1151 infants as compared with 885, and (2) measles, which caused 125 infant deaths as against 77 in the previous year.

The two following tables show how the Infant Mortality was made up both as regards age and cause of death :—

| Grouped Causes of Infant Deaths. | No. of Deaths. | | Ratio per 1,000 Births. | |
|----------------------------------|----------------|-------|-------------------------|-------|
| | 1905. | 1906. | 1905. | 1906. |
| Wasting diseases | 1834 | 1840 | 46·4 | 46·2 |
| Diarrhœal diseases | 885 | 1151 | 22·4 | 28·9 |
| Convulsions | 540 | 499 | 13·7 | 12·5 |
| Bronchitis | 541 | 472 | 13·7 | 11·8 |
| Pneumonia | 458 | 345 | 11·6 | 8·7 |
| Common Infectious diseases .. | 229 | 309 | 5·8 | 7·8 |
| Tuberculous diseases | 211 | 192 | 5·3 | 4·8 |
| Other causes | 567 | 604 | 14·3 | 15·2 |
| Total deaths under 1 year of age | 5265 | 5412 | 133·0 | 136·0 |

| Age Distribution of Infant Deaths. | No. of Deaths. | | Ratio per 1,000 Births. | |
|------------------------------------|----------------|-------|-------------------------|-------|
| | 1905. | 1906. | 1905. | 1906. |
| Under 1 week | 1217 | 1153 | 30·8 | 28·9 |
| 1 to 2 weeks | 245 | 272 | 6·2 | 6·8 |
| 2 to 3 „ | 233 | 251 | 5·9 | 6·3 |
| 3 to 4 „ | 179 | 206 | 4·5 | 5·2 |
| Total under 1 month ... | 1874 | 1882 | 47·4 | 47·2 |
| 1 to 2 months | 490 | 530 | 12·4 | 13·3 |
| 2 to 3 „ | 487 | 411 | 12·3 | 10·3 |
| Total under 3 months ... | 2851 | 2823 | 72·1 | 70·9 |
| 3 to 6 months | 946 | 983 | 23·9 | 24·7 |
| 6 to 9 „ | 831 | 861 | 21·0 | 21·6 |
| 9 to 12 „ | 637 | 745 | 16·1 | 18·7 |
| | 5265 | 5412 | 133·0 | 136·0 |

Table I., which is folded at the end of this report shows for every district in the Riding the number of infant deaths per thousand births, and affords an interesting basis of comparison (see column 22). It is satisfactory to observe that in many districts a very low figure was recorded during 1906, *e.g.* Gildersome 31, Stainland 39, Clayton West 40, Silsden 41, Burley-in-Wharfedale 43. By contrast we have Whitwood 247, Heckmondwike 204, Batley 182, Bolton-on-Deane 204, Wombwell 181, and many other districts where the rate is greatly in excess of the average.

Looking to the Reports of the various Medical Officers of Health for some explanation of these figures one finds plenty to quote. At Whitwood, Dr. Hillman fears that the state of affairs gets worse in spite of his yearly drawing attention to the subject. He writes,—“Improper feeding and “maternal ignorance appear to be the main factors in producing these “appalling results, but the seriousness of the state of affairs appears to me “to make it incumbent upon Sanitary Authorities to redouble their efforts “towards obtaining healthy surroundings and sanitary dwellings for the “population and thus at least do *their* part towards lessening this very great “evil.” At Heckmondwike, the Medical Officer of Health is quite as emphatic in his denouncement of the methods of bringing up babies, and refers to the improper and irregular feeding of infants during absence of their mothers at work. In that district, quite an excessive number of infant deaths were put down to “Convulsions,” the ratio to the births being 73 per thousand, as against 12·5 for the Riding generally. Dr. Broughton reports,—“It is a common thing when an infant has got one or two teeth to give it “almost any kind of food that may be on the table, which is a very risky and “dangerous plan, because it is sure to cause indigestion and probably bring “on Convulsions.” He also mentions the habit of giving narcotic syrups to young babies. In the Batley Report, Dr. Erskine Stuart discusses the position as follows :—“Infantile Mortality continues to be a serious blot on “our statistics. Diarrhœa largely is the cause of this in most seasons, and “the proposal to largely augment the watering of the streets, and to continue “the flushing of drains and the cleaning of house gullies, will doubtless aid “in reducing this materially, especially in hot seasons. The provision of a “Health Visitor to instruct mothers as to their own health and that of their “children would do more than anything to counteract the malnutrition of “infants. As regards Diarrhœa, it is mainly a question of how to feed, and “the preservation from fermentation and decomposition of various foods. A “combination of instruction to mothers, and the imitation of nature’s showers “by means of watering the streets, and thus keeping down dust and decom- “position of foods, and the inhalation of noxious miasmata, will do much. I “feel confident, especially in exceptionally hot seasons. The thorough “flushing of sewers, and the cleansing of house gullies will tend to keep the “child’s environment sweet and freshen the air. To build up a sturdy race “must be our ambition.” In the Bolton-on-Dearne District, the centre of infantile mortality was at Goldthorpe, and among the preventive methods adopted was the distribution of leaflets on Infant Feeding. Dr. Burman mentions that the infant deaths from Diarrhœa “all occurred in houses provided with privy-middens, and not one in a house where there was a waste-water closet.” Dr. Millar makes some cogent remarks to the Wombwell Urban Council on the connection between infantile mortality, diarrhœa, insufficiency of water supply, and dirty surroundings and impure food, thus reminding us that it is not sufficient to distribute leaflets to mothers whilst permitting sanitary defects of primary importance.

During the year the West Riding Sanitary Committee ordered the preparation and distribution of a pamphlet on “How to take care of the Baby.” Copies of this were given to every midwife in the Riding, with instructions to hand them to mothers in all suitable cases. Many midwives have applied for

additional copies, and numerous expressions of appreciation have reached me. Local Sanitary Authorities have also availed themselves of the opportunity of purchasing supplies from the printers at cheap rates, the type being kept standing for this purpose. One Medical Officer reports that it exactly meets the case "and ought to be in the possession of every young mother, being "much more useful to her and to the community than such advertised noxious "books as one often sees in the houses."

Several reports, however, point to the drawback that busy mothers cannot or will not always read printed instructions, although they invariably welcome verbal advice suitably conveyed by a lady health visitor, and there is no doubt that such officers will figure largely in the future fight against infant mortality. As an exposition of the work which is waiting to be done in this way reference may be made to the excellent report issued by the lady health visitor of the Wakefield Sanitary Aid Society. Miss Boileau has been able to deal in a practical manner with several problems associated with this question of infant mortality, and her remarks are well worth reading, although perhaps it is outside the function of this report to review them.

Dr. Ewing mentions that at Ardsley (East and West), "the District "Nurse has had a most successful and encouraging class in home nursing, "and some 80 adult ladies have been in constant attendance." He adds,— "to my mind such lectures as these will have far more reaching and beneficial "effects than the addition to the already overcrowded curriculum of school "children of a series of lectures on physiology." On the other hand, several of the reports urge that the elder girls in schools should be given practical lessons in the washing, dressing, feeding and general care of infants and young children. Dr. Erskine, of Goole, and several other Medical Officers, advocate visitation by District Nurses in the absence of a regular Female Health Visitor.

As showing how much depends upon proper care and attention in the rearing of children it may be mentioned that the infant mortality among illegitimate children during 1906 was 317 per thousand, compared with 137 for legitimate children. These figures are based upon returns from 52 districts in the Riding,—the other reports containing only incomplete figures under this head.

Zymotic Diseases. — This group includes besides the chief notifiable diseases the three less dreaded ailments, viz.:—measles, whooping cough, and diarrhoea. It will be seen from the following table that these three non-notifiable diseases were responsible for no less than 2184 deaths out of the total of 2849. The death rate from the total zymotic diseases for 1906 was 1·93 per thousand of the inhabitants. This is considerably in excess of the previous year's figure, and slightly above the five years average. If, however, we compare only the notifiable diseases the record for 1906 is 15 per cent. better than that for 1905.

| Zymotic Disease. | No. of Cases 1906. | No. of Deaths 1906. | Ratio of Deaths. | |
|--|-----------------------|------------------------|----------------------------------|---------------------------------|
| | | | (a) per 1000 persons attacked | (b) per 1000 persons living. |
| (1) Small Pox ... | 3 | nil. | nil. | nil. |
| (2) Scarlet Fever ... | 6530 | 237 | 36.3 | 0.16 |
| (3) Diphtheria and Mem- branous Croup ... | 1670 | 263 | 157.5 | 0.18 |
| (4) Typhus, Enteric and Continued Fevers | 963 | 165 | 171.3 | 0.11 |
| (5) Measles ... | Not notified | 523 | ? | 0.35 |
| (6) Whooping Cough ... | „ | 332 | ? | 0.23 |
| (7) Diarrhoea ... | „ | 1329 | ? | 0.90 |
| Total of Chief Zymotic Diseases ... | ? | 2849 | ? | 1.93 |

Small-pox.—The year 1906 must be placed at the bottom of the small-pox curve, there being only three cases notified during the year—all of which recovered. These took place as follows:—one in April at Wakefield, one in June at Castleford, and one in June at Ravensthorpe.

The Riding has not been so free from small-pox for some years and in these circumstances the reports make little reference to small-pox or to vaccination. It would be unfortunate, however, if this freedom were mistaken for immunity or resulted in a general neglect of vaccination.

Scarlet Fever.—This disease was very prevalent in many parts of the Riding although the total number of cases (6530) was more than a thousand below the previous year's figure. It caused 237 deaths, equal to 0.16 per thousand of the population, the average death rate for the previous five years being 0.14.

Taking the Administrative County as a whole there were during 1906 more than four persons attacked with Scarlet Fever in every thousand of the population, but in many localities where the disease became epidemic the rate of attack was much in excess of this, for instance Kiveton Park 25.0, Mytholmroyd 17.3, Stocksbridge 16.6, Skelmanthorpe 15.7, Dodworth 15.4, Normanton 13.1, Handsworth 12.8, Bolton-on-Dearne 12.2, and many others. In most places the disease was of a mild and non-fatal type, a circumstance which increased the difficulties of the Sanitary Authorities by reason of the greater carelessness of parents and the greater chances of unrecognised cases spreading the disease. This diminishing severity of scarlet fever seems to be progressive for I find that whilst in the last quinquennium there were 3.2 deaths per hundred cases the mortality during the previous five years was 4.0 and before that it was 5.2 per hundred cases. The causes and meaning of this movement are at present largely matters of conjecture, and whilst there

has been much argument recently as to the failure of scarlet fever hospitals to cope with this disease, it may be that the changes noted are not unconnected with the development of hospital treatment during the last 15 years.

In the Kiveton Park Rural District, the excessive prevalence noted was a continuation of the epidemic of 1905, and affected chiefly the mining population in that district. Obviously the Joint Hospital could not cope with the number of cases which arose, and indeed it furnished an illustration of the fact that an institution of this kind is primarily intended for the prevention of epidemics, and not for their abatement. Nevertheless, Dr. Wills reports that the hospital was of the greatest service, especially in cases where the disease affected members of families living in small houses without means of home isolation. He also mentions the success which attended the work of a special officer appointed to assist in the non-institutional measures against scarlet fever, thus "it was suggested that sufficient care was not taken by the
"parents of children affected, and in October it was decided to engage an
"assistant Female Inspector, who should go daily to assist the Medical
"Attendant by spraying the throats and nostrils of the sick with antiseptics
"and otherwise. This was carried out for two months, and it appeared to
"have a marked influence on the prevalence of the disease, since it taught
"the mothers how to manage the sick, and prevented a good deal of
"mischievous visiting. When I visit a case of infectious disease I sometimes
"find those in charge quite incapable of managing it, so that in such cases a
"Female Inspector is able to do a great deal to assist the people themselves,
"and to protect the public from the spread of the disease. Similar success
"has attended the appointment of a Female Visitor on previous occasions.
"A suitable person can do a great deal of good by teaching and assisting
"those in charge of the cases."

At Normanton also, where the medical officer reports 179 cases and where the outlook appeared grave, "the Council wisely engaged a nurse,
"whose duty it was to visit infected houses to help in the nursing of patients
"and to see that proper precautions were observed." Dr. Beaman adds, "it
"is a source of gratification to know that the disease was stamped out very
"quickly."

In several of the districts near Sheffield, e.g., Wortley Rural, Handsworth, Kiveton Park Rural and Stocksbridge a good deal of the prevalence of scarlet fever was ascribed to intercourse with Sheffield where an extensive epidemic was raging. Dr. Anderson, of Wortley, writes—"Many cases are
"accounted for in this way, but, on the other hand, it would appear as if
"most of the mining and manufacturing centres of industry are epidemic foci
"of the disease. The infection may linger for a long time in dust, articles of
"clothing, etc., inside dwelling houses that are imperfectly disinfected,
"though the cases of recurrence in the same house are not so common as
"might be expected. We know also from recent experience what a prolonged
"stay the infecting organism (whatever it may be) is capable of making in the
"throats and nasal cavities of convalescents, and it is probable that in this
"way and by means of unrecognised cases that the infection is kept alive in
"such localities."

Dr. Robertshaw was much impressed with the importance of nasal discharges during and after convalescence. He mentions that "cases in which there was perfect desquamation and which had been completely isolated for a full six weeks handed on the disease to others, and on examination it was found that some nasal discharge was present in the original case."

Many of the reports refer to the inexplicable movements of this disease. At Bolton-on-Dearne "86 cases occurred in 58 houses and it was very curious to see how it meandered about." At Dodworth "20 of the children attacked did not attend school," while at Handsworth "it was not uncommon for children under five years of age who did not attend school and who were said not to have been in any neighbour's house or out of the locality to be the first of the family to be attacked." Dr. Scott thinks that in such cases infection must have been conveyed by the parents or contracted in an insanitary backyard. At Clayton some of the cases were commenced by patients just released from hospital being allowed to mix with non-infected people before the quarantine period had passed. Dr. Millar mentions that it was necessary to keep some of the patients in the Kendray hospital 100 days as a precaution against return cases. Dr. Milne in the Mirfield report points out that the death rate of those treated in hospital was 1·8 per cent. and of those treated at home 17·6 per cent. Absence or insufficiency of hospital accommodation is reported in several districts as responsible for the continuation of the disease. Dr. MacGregor, in the Skelmanthorpe report, says "As to the causes of this extensive outbreak I can only again express the opinion I gave in my last report that the want of means of isolation and the great carelessness of many of the people are the chief ones. As is well known, the great majority of the cases in Skelmanthorpe occurred in cottage houses in which complete isolation is absolutely impossible. Usually the mother is the nurse and she, of course, has to attend to the household duties as well as to the patient."

Diphtheria was very generally prevalent during 1906 to a somewhat greater extent than in recent years, though not up to the figures of 1900 and 1901. Its highest incidence was during the first and last quarters of the year, but no season was conspicuously free from prevalence. Altogether 1602 cases were notified during the year, and 68 cases of Membraneous Croup, producing together 263 deaths, or 0·18 per thousand of the population. The places with the greatest proportion of cases were Meltham, Goole, Dodworth, Cleckheaton, Harrogate, Marsden, Saddleworth, and Ilkley; but a glance down column 4 of Table III (see end) shows that the great majority of districts were more or less affected.

In the Goole report Dr. Erskine presents a chart comparing the weekly rainfall figures with the weekly notifications of diphtheria, but he abstains from drawing any conclusions. Infection at school seems to have been a common experience. Dr. Webster mentions that most of the cases at Marsden were mild in character, and would probably not have been notified as diphtheria but for the diagnostic proof afforded by bacteriological tests. At Saddleworth the same mild nature was usually noticed but there were exceptions, and Dr. Ramsden adds "A curious feature was that the first case in any of the districts, as a

“rule, resulted in death. The explanation of this is probably that people not being on the look-out for diphtheria did not call in medical assistance sufficiently early for it to be of much use, but when once their attention had been drawn to the proximity of the disease they were more wide awake to its danger, and so had the full advantage of the diphtheria antitoxin.”

As may be seen from Part III. of this report dealing with the Bacteriological Laboratory, a very much greater number of swabs from the throat were forwarded to the County Hall for diagnosis, and the reports contain many eulogistic references to the valuable aid thus afforded. The department also on several occasions undertook the examination of all the throats in a given school with the object of detecting any unrecognised cases. Great use was again made of the bacteriological method of ascertaining when a patient was fit for discharge from hospital. Dr. Halliwell of Dewsbury writes:—“I hold strongly that no case of Diphtheria should be certified as being free from infection until Bacteriological examinations give negative results. A striking example of this has recently occurred in a case in which the Diphtheria bacilli were present in the throat for a period of eleven weeks. But for this method of examination the case in question would have been admitted into school in an infectious state, with in all probability serious consequences.”

At the Keighley Hospital Dr. Scatterty also applied the test to the scarlet fever patients with the result that “out of 243 Scarlet fever admissions no fewer than 68 were found by the West Riding bacteriologist to exhibit the bacillus of Diphtheria, and an additional 33 had the spurious or pseudo bacillus of Diphtheria in their throats. Many of these children were doubtless “carriers” and it is reasonable to conclude that many carriers of Diphtheria existed among the children treated at home. This would help to explain cases of Diphtheria arising among children who had not been exposed to any known infection.”

Enteric Fever.—It is satisfactory to report that the cases of enteric fever were fewer in 1906 than in any year since the establishment of the County Council. Altogether 955 persons were attacked and 164 died. The attack-rate for the West Riding was therefore only 6 cases for 10,000 people, but in some districts this ratio was greatly exceeded, as at Thorne R. 42, Whitwood 27, Morley 25, Marsden 23, Rothwell 17, Featherstone 16.

In the first-named district twenty households were infected, 17 of these being in the Thorne Parish. Dr. Arbuckle found that “23 patients drank water from the canal, two from the river Don, one from the river Trent, and the remaining 8 from shallow wells on the premises which were liable to contamination from middens situate in close proximity and from faulty drainage.” The cases in the Doncaster Rural District were mostly from the mining centres of Denaby Main and Conisboro, and Dr. McLean thinks that “in some instances ashpits and closets must have been infected by being used for considerable periods before the nature of the disease was definitely known.” An instance of particular infection is given in the report for East and West Ardsley, where Dr. Ewing writes—“The two cases were those of men who worked as platelayers on the railway. The first case arose very soon

“after the man had partially cleaned out a disused archway which had been made a sanitary convenience by the public. The second was that of a man who replaced the previous case at the work mentioned.”

At Morley, Dr. Steele blames the privy-midden system, and recommends that the scavenging be done at night. He also holds the sewers as responsible for spreading infection and mentions that “as long as the drought continued the number of cases increased, but as soon as the rain came and the sewers were flushed the number rapidly declined.”

In connection with an outbreak of enteric fever in and around Philip Street, Whitwood, Dr. Hillman's investigations exonerated the water and milk supplies and led him to the opinion that “direct infection from one patient to another has occurred through friends and relatives not taking sufficient precautions.”

This difficulty of home isolation is illustrated in quite a number of reports where instances are quoted of several members of one family taking the disease from the first case. Dr. Anderson of the Wortley Rural District writes—“Even with careful nursing it is sometimes difficult to prevent the infection spreading to other members of the family, but when the wife or mother is day and night nurse and cook as well, the difficulties are well nigh insurmountable. Thus in one family in Highgreen where the domestic conditions were good, three children and subsequently the father were all attacked, the period of anxious nursing for the mother extending from the middle of September and not being finished at the time of writing (February). In another house at Chapeltown where the domestic circumstances were bad, no fewer than six members of the family were attacked, of whom four died.” Such lamentable examples show the importance of making provision for the isolation of enteric patients in the hospital in those cases where the home conditions do not admit of proper nursing.

Diarrhœa.—The deaths under this heading (which includes epidemic enteritis, dysentery, and choleraic diarrhœa) were more numerous during 1906 than in recent years. The total at all ages was 1329 and of these no less than 876 were infants under 12 months old. It will thus be seen that diarrhœa is a considerable factor in infant mortality and, as the disease is to a large extent preventable, there is a great work to be done in instructing the people as to the conditions which conduce to infantile diarrhœa. Much of the mischief is ascribed to the climate, but it needs to be emphasised that hot summer weather is in no case the cause of diarrhœa except where it is superadded to unhygienic conditions of some kind. That being so, the regular occurrence of epidemic diarrhœa in a district points directly to the need for reform, either in the abolition of insanitary surroundings, the provision of better dwellings with proper foodstores, or the instruction of mothers in the art and science of preparing suitable food and preserving it from contamination.

Among the districts where infantile diarrhœa was very fatal during 1906, the following may be mentioned :—Whitwood, Rawmarsh, Darfield, Bolton-on-Dearne, Wombwell, Hoyland Nether, Worsborough, Batley, Barnsley, Swinton, Doncaster R. and Goole. It will be noticed that they all lie to the

south-east of the Ridings and none of them are at the top of a valley—a significant fact showing the importance of subsoil drainage in the prevention of epidemic diarrhoea. This point is touched upon in several of the Reports, as for instance Darfield, where Dr. Castle writes,—“All the cases of Typhoid Fever and more than half the deaths from Infantile Diarrhoea have occurred in the Low Valley District. Of course this may be merely a coincidence; on the other hand, it may be because the backyards in this district are of surfaces which are not sanitary, because it is the most crowded of any of the districts, or because it is a flat district, which is less easily drained than any of the others. Any of these causes would help to provide a soil in which the germs of the diseases in question would readily grow.” At Bolton-on-Dearne, Dr. Burman thinks that,—“The wet weather at the beginning of August followed by the intense heat at the end of the month would cause this particular microbe to multiply enormously.” The conditions during an epidemic at Wombwell are described as follows by Dr. Millar,—“Little water of any sort and a temperature which at one time rose to 91° rendered polluted soil highly favourable to the development of bacteria.” Dr. Sadler, in recording the figures for Barnsley, argues strongly in favour of the water-carriage system, and points out the excessive incidence of diarrhoea in houses having closets on the privy system. The following table compiled by Dr. Sadler relating to the Borough of Barnsley is worthy of reproduction :—

| Year. | Deaths from Diarrhoea. | | | Excess of Deaths in Privy Ashpit Houses above number expected. |
|-------|-------------------------------------|---|--|--|
| | Occurring in Water Carriage Houses. | Expected if proportionate in Privy Ashpit Houses. | Actually occurring in Privy Ashpit Houses. | |
| 1897 | 13 | 39 | 98 | 59 |
| 1898 | 11 | 22 | 65 | 43 |
| 1899 | 20 | 30 | 48 | 18 |
| 1900 | 18 | 27 | 55 | 28 |
| 1901 | 17 | 26 | 70 | 44 |
| 1902 | 6 | 9 | 47 | 38 |
| 1903 | 14 | 21 | 48 | 27 |
| 1904 | 26 | 26 | 73 | 47 |
| 1905 | 10 | 10 | 41 | 31 |
| 1906 | 31 | 26 | 68 | 42 |
| | | Total excess in 10 years ... | | 377 |

Dr. Erskine Stuart, of Batley, thinks that,—“as regards diarrhoea it is mainly a question of how to feed, and the preservation from fermentation and decomposition of various foods.” Dr. Hillman, at Whitwood, has noticed that,—“badly fed, badly nourished, and rickety children succumb to this disease very rapidly, and there is a great need for education amongst parents and guardians in the direction of proper feeding and management of

“young infants.” In the Rawmarsh District, a poster was got out giving directions for the prevention of summer diarrhœa. The counsel given is so excellent that I venture to reproduce it here, though I fear that its adoption can only be secured by personal visitation and explanation :—

Prevention of Diarrhœa.

“This disease is prevalent in summer and causes many deaths annually, especially of children under one year of age.”

“It is associated with fouling of the soil and air with decomposed animal and vegetable rubbish, stinking privies and ashpits, dirty fowl-houses, pig-styes, &c., want of domestic and personal cleanliness, and contamination of food, especially milk.”

“It is much more prevalent among, and fatal to, artificially fed than breast fed infants.”

“It is a preventable disease.”

To do what you can to prevent it the following rules should be observed :—

Cleanliness.

“Keep your house-floors, walls, ceilings, cupboard, pantry, sinks and cellars, and yard scrupulously clean. Burn all animal and vegetable refuse, and do not allow it or slops to be thrown in the yard, or into the ashpit, which should be kept perfectly dry.”

“Report at once to the Sanitary Officers any foul accumulation, choked or smelling drain, or other nuisance.”

Ventilation.

“Have the whole of your house well ventilated by day. Keep the bedroom windows down at the top during the night. See that all fireplaces and chimneys are always open and not covered up with paper, &c., and blocked with old sacks.”

Food.

“All food should be kept as free as possible from dust and flies, and in a cool, dry, and airy place. Milk should never be left uncovered, and in hot weather should be boiled immediately or soon after being received. Keep all feeding utensils constantly clean and sweet with boiling water. Avoid eating stale fish and tainted meat of all kinds ; also fruit and vegetables in a state of decay.”

The poster goes on to deal with the question of infant feeding, but as pamphlets on this subject are by this time pretty general, one having been recently issued by the County Council, I will omit this part of the print.

Measles.—This disease was about twice as prevalent in 1906 as in the previous year, although not greatly in excess of the average of five years. It caused 523 deaths, thus adding 0·35 to the County death-rate. Its greatest prevalence was about the middle of the year, with minima at the beginning and end. No record is available as to the number of persons affected, as the disease is not generally notifiable, but Table II shows that deaths were registered in nearly 100 out of the 160 districts of the Riding. It caused very considerable interference with the work of elementary schools no less than 156 closures taking place on this account alone besides a large number of exclusions. The great difficulty in checking epidemics of measles is that children attend school in an infectious state before they become quite ill. For this, the remedy consists of greater vigilance on the part of teachers and the establishment of some system whereby all cases of seedy scholars can be enquired into by a school nurse or doctor.

Epidemic prevalence of measles is indicated by the letter E in column 14 of Table III, see end. It is impossible to give particulars here, but in the following places the relative fatality seems to have been greatest :—Altofts,

Knottingley, Hunslet R., Castleford, Rothwell, Holmfirth, Ripon, Harrogate and Barnsley. In the first named district the disease is notifiable and 201 cases were returned during the year, while the Medical Officer thinks many more mild cases remained unnotified. At Pontefract 164 cases were notified, and at Ilkley 147.

In the Holmfirth report, Dr. Trotter relates at length his prolonged experience with measles, and discusses the question of school closure, being of opinion that "this measure is useless unless enforced at the very beginning of an outbreak." He adds,—“Once the method of school closure is adopted the Medical Officer of Health loses touch with the epidemic, since measles ‘is not a notifiable disease.’”

Allowing the extreme difficulty of preventing the spread of measles under the modern conditions of aggregating children in large schools, there is plenty of scope for reducing the fatality of the disease. Many deaths are caused through the ignorance of parents in failing to appreciate the great risk of serious complications arising if the little sufferers are carelessly permitted to run about as soon as they are able. It will be seen that in 1906 measles caused more deaths than scarlet-fever and diphtheria together.

Whooping Cough is debited with 332 deaths as compared with 255 in the previous year, which however was the record year for low prevalence. The year 1906 could not be described as an epidemic year although the disease was uniformly present from beginning to end with some extra diffusion in the autumn. It is said to have reached epidemic proportions at some 6 or 8 centres (see col. 15 of Table III). Many of the reports refer to the prevailing carelessness of parents with regard to this disease and mention is made of the popular idea that it is not necessary to confine patients to the house. This notion is responsible for many fatal complications and also for much direct infection.

Phthisis or Pulmonary Tuberculosis was given as the cause of 1,409 deaths in the Administrative County during 1906, corresponding to a death-rate of 0·9 per thousand of the population. This method of expressing the toll which is annually levied by phthisis scarcely conveys to the man in the street the true position. He is apt to conclude from it that each year one man in a thousand dies from this disease, and he congratulates himself that this is a very small proportion. The ratio given above is based upon the whole population, which of course includes large numbers of infants who practically do not contribute to this figure. If we calculate the phthisis death-rate on the adult population, the figures are such that at the age of 35, one man out of every 350 dies annually of this disease; or, if we put it another way, it is true to say that of all men aged 35, one in every 14 will eventually die of consumption, assuming the present condition of affairs to continue.

Although much has been done, and with good effect, to diminish the holding of this scourge in civilized countries, it will be seen that we have not yet reached a stage at which our efforts may be allowed to flag. So far as the West Riding is concerned it is to be hoped that every Sanitary Authority will endeavour to carry out the programme outlined at page 9 for the suppression of the disease. The necessity for this work is not limited to any particular area or class as may be gathered from col. 20 of Table I. (see end) which

gives the phthisis death-rate for 1906 in every sanitary district of the Riding. We may exclude such exceptional rates as Flockton 3·9, Gunthwaite 3·3, Denholme 2·6, because in such small districts the coincidence of a few deaths sends up the rate unduly. But the following, among other fairly large districts, had a mortality from phthisis which, if not explained by unusual circumstances, points to special need for restrictive measures,—Dewsbury (1·7), Hebden Bridge (1·7), Skipton (1·7), Yeadon (1·7), Stocksbridge (1·6), Ripon (1·5), Elland (1·5), Wath (1·5), Keighley (1·4), Bingley (1·4), Heckmondwike (1·4) Horbury (1·4).

The comparative incidence of phthisis is not discussed in many reports, possibly because it is such a steady constituent of the returns with no epidemic fluctuations to attract attention. In his excellent report on the Keighley Borough, Dr. Scatterty points out that a considerable reduction has taken place in 20 years but still the death rate from phthisis is somewhat higher than the average of West Riding towns. While he asks for more consideration of this important problem, it is evident that it has not been neglected in the past. Dr. Scatterty writes,—“If overcrowding, dampness, and want of sunlight are favourable to the growth and spread of the tubercle bacillus—and about that there can be no doubt—then your recent action in closing so many cellar dwellings has been a good blow struck at the root of this formidable disease.” He mentions another blow which might well be taken, viz. :—“levelling some of the dilapidated dwellings in Westgate and so letting in fresh air and sunlight into that crowded district.” In the Heckmondwike report Dr. Broughton advocates free ventilation of the houses by more open windows, and he calls attention to the common habit of indiscriminate expectoration. Similarly in the Holmfirth district Dr. Trotter points out that “the effect of a naturally pure and bracing atmosphere is discounted by the fact that nearly one-third of life is spent by many people in a badly ventilated bedroom.” Dr. Williamson of Saudal writes,—“It is my fortune to perambulate the streets at all hours of the day and night, and my habit to notice how many house windows are open. More especially in the heat of last September late at night I saw whole streets without a bedroom window open, and pictured to myself the steaming sleepers within and wondered not so much how they could sleep as how they could live.”

Systems of voluntary notification of phthisis are in vogue in some 16 districts, and it is becoming more customary for Sanitary Authorities to offer to disinfect rooms vacated by consumptives. Dr. Tennyson Brown reports that after each fatal case at Horbury “the Sanitary Inspector was at once instructed to call at the house and offer to disinfect the premises with sulphur dioxide and spray the bedroom with formalin. In only one instance has the householder objected to this being done.” On the other hand Dr. Buck reports that in the Hunslet Rural District the people very seldom avail themselves of the offer of disinfection. Valuable as this measure is, it is not sufficient that the aid of the Authority should be confined to disinfection after death. The living patient when in an advanced stage is capable of acting as a copious distributor of infection, and his friends need to be advised and assisted in the avoidance of danger.

In the Selby District patients are admitted free of charge to the temporary wards, where, according to Dr. Stedman,—“they not only gain the advantage of a sanatorium treatment but are taught to live in such a manner as to

“reduce to a minimum the danger of infection to those around them. All “spitting except in spittoons or handkerchiefs is strictly forbidden at the “hospital.” In districts where removal of patients is not practicable much good can be done by the private medical practitioner co-operating with the sanitary officials of the district. Dr. Gibson records the fact that of 29 houses where cases occurred “16 were back-to-back and 13 were through houses ; “5 were overcrowded, 3 damp, 2 dilapidated, 3 dirty, and 3 badly lighted. “In very few cases did the patient have a separate bedroom.”

The following is an attempt to summarise the attitude of the various Authorities of the West Riding in this important fight against Tuberculosis:—

| | | |
|---|--------|----|
| No. of Authorities having voluntary systems of notification | ... | 16 |
| No. of Districts where special inspection is made of patients' houses | | |
| where known | | 48 |
| No. of Districts where disinfection of patients' houses is carried out by | | |
| the Authority | | 88 |
| No. of Districts where advice is distributed to patients and others as to | | |
| prevention of Tuberculosis | | 20 |

One or two of the reports state that voluntary notification of phthisis has not been a success because practitioners will not notify ; but in most cases the testimony is the other way. The districts credited with carrying out disinfection include those where it is only done by request, and therefore the actual amount of work done under this head is not so great as the number would suggest. Whilst it is significant to observe that requests for disinfection do come voluntarily from householders it is well that Authorities should not be content to deal only with those houses whose occupants are sufficiently enlightened to make such a request.

None of the Authorities seem to have taken any action to enforce the Byelaws which are in operation prohibiting expectoration in enclosed places of public resort and there is no example of a public vehicle or public room having been disinfected on account of its contamination by spitting.

Other Tubercular Diseases.—Under this head 752 deaths were registered during 1906. This group includes all deaths attributable to tubercle mischief in any part of the system other than the lungs. The annual reports do not specify the seat of the trouble, but the Registrar General states that in the country generally this group of deaths is made up as follows :—Tuberculous Meningitis 35 per cent, Tuberculous Peritonitis 35 per cent., other forms 30 per cent. As regards age-distribution, the mortality rises steadily from birth up to the end of the first year, declining gradually thereafter. Practically the whole of this mortality may be regarded as preventable, since children are rarely, if ever, affected with tuberculosis at birth, but readily acquire it by ingestion of contaminated food, and milk. In this connection, the findings of the Royal Commission on Tuberculosis may be quoted, as their conclusions are of immense importance to Sanitary Authorities and others engaged in the protection of the milk supply. The Commissioners say :—

“There can be no doubt but that in a certain number of cases the tuberculosis occurring in the human subject, especially in children, is the direct result of the introduction into the human body of the bacillus of bovine tuberculosis ; and there also can be no doubt that in the majority at least of these cases the bacillus is

introduced through cow's milk. Cow's milk containing bovine tubercle bacilli is clearly a cause of tuberculosis, and of fatal tuberculosis, in man.

A very considerable amount of disease and loss of life, especially among the young, must be attributed to the consumption of cow's milk containing tubercle bacilli. The presence of tubercle bacilli in cow's milk can be detected, though with some difficulty, if the proper means be adopted, and such milk ought never to be used as food. There is far less difficulty in recognising clinically that a cow is distinctly suffering from Tuberculosis, in which case she may be yielding tuberculous milk. The milk coming from such a cow ought not.....to be used as a food at all.

Our results clearly point to the necessity of measures more stringent than those at present enforced being taken to prevent the sale or the consumption of such milk."

Respiratory Diseases for statistical purposes mean bronchitis, pneumonia and pleurisy, which diseases during 1906 accounted for 3323 deaths. The great majority of these would be young children,—in fact nearly a thousand were under one year of age. It is satisfactory to be able to report, however, that there seems to be a steady decline going on, and the figures for 1906 are well below those of 1905, which were, at the time, the lowest ever recorded.

Cancer. There is little to say about this disease beyond giving the grim figures for successive years as below. It will be seen that the slight retardation noted last year has not been maintained.

In 1900 there were 988 deaths = 0·68 per thousand.

| | | | | | |
|------|---|------|---|-------|---|
| 1901 | „ | 1041 | „ | =0·71 | „ |
| 1902 | „ | 1080 | „ | =0·74 | „ |
| 1903 | „ | 1092 | „ | =0·77 | „ |
| 1904 | „ | 1149 | „ | =0·80 | „ |
| 1905 | „ | 1125 | „ | =0·77 | „ |
| 1906 | „ | 1175 | „ | =0·80 | „ |

Many earnest workers are engaged in the investigation of this subtle disease, and the whole civilised world is waiting for light on the subject of its causation and cure.

Other Tabulated Diseases.—The following comparative Table shows the number of deaths ascribed to various scheduled causes which have not been separately considered in the foregoing remarks. Full details will be found in Table II. (see end).

| | | | | Number of Deaths in Administrative County. | | |
|---------------------------------------|-----|-----|-----|--|-------|-------|
| | | | | 1904. | 1905. | 1906. |
| Epidemic Influenza | ... | ... | ... | 152 | 216 | 137 |
| Cholera | ... | ... | ... | — | — | — |
| Plague | ... | ... | ... | — | — | — |
| Puerperal Fever | ... | ... | ... | 37 | 51 | 45 |
| Erysipelas | ... | ... | ... | 34 | 44 | 33 |
| Other Septic Diseases | ... | ... | ... | 98 | 86 | 115 |
| Alcoholism | ... | ... | ... | 184 | 195 | 183 |
| Venereal Diseases | ... | ... | ... | 40 | 43 | 30 |
| Premature Birth | ... | ... | ... | 882 | 972 | 914 |
| Diseases and Accidents of Parturition | ... | ... | ... | 201 | 153 | 208 |
| Heart Disease | ... | ... | ... | 2137 | 1969 | 2120 |
| Accidents | ... | ... | ... | 623 | 613 | 638 |
| Suicides | ... | ... | ... | 162 | 173 | 174 |

Seasonal Prevalence of Disease.—The next two tables are inserted to give an idea of the monthly variations in the prevalence of various diseases in the West Riding. The totals in the first table are slightly incorrect, differing from those dealt with throughout this report by reason of their having been hastily compiled by local medical officers from month to month for the purposes of the County Notification Summary.

Monthly Totals of Reported Cases 1906.

| | Jan. | Feb. | Mar. | April. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Total |
|------------------|------|------|------|--------|------|-------|-------|------|-------|------|------|------|-------|
| Small Pox ... | — | — | — | 1 | — | 2 | — | — | — | — | — | — | 3 |
| Asiatic Cholera | — | — | — | — | — | — | — | — | — | — | — | — | — |
| English Cholera | — | — | — | — | — | — | — | 1 | — | — | — | — | 1 |
| Diphtheria ... | 155 | 144 | 111 | 79 | 111 | 98 | 124 | 103 | 111 | 181 | 170 | 151 | 1538 |
| Croup ... | 12 | 7 | 4 | 5 | 3 | 4 | 8 | 3 | 6 | 7 | 2 | 5 | 66 |
| Erysipelas ... | 122 | 73 | 108 | 99 | 103 | 76 | 73 | 63 | 74 | 91 | 97 | 93 | 1072 |
| Scarlet Fever .. | 761 | 643 | 585 | 579 | 608 | 458 | 484 | 414 | 400 | 530 | 515 | 450 | 6427 |
| Typhus ... | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Enteric Fever . | 52 | 53 | 43 | 37 | 40 | 34 | 48 | 67 | 171 | 220 | 108 | 65 | 938 |
| Relapsing Fever | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Continued Fever | — | 1 | 2 | — | — | — | — | 2 | 1 | 1 | — | — | 7 |
| Puerperal Fever | 11 | 7 | 8 | 8 | 8 | 9 | 5 | 6 | 7 | 4 | 2 | 4 | 79 |

Monthly Totals of Districts Reporting, 1906.

| | Jan. | Feb. | Mar. | April. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. |
|--------------------|------|------|------|--------|------|-------|-------|------|-------|------|------|------|
| Small Pox ... | — | — | — | 1 | — | 2 | — | — | — | — | — | — |
| Asiatic Cholera... | — | — | — | — | — | — | — | — | — | — | — | — |
| English Cholera . | — | — | — | — | — | — | — | 1 | — | — | — | — |
| Diphtheria .. | 58 | 51 | 48 | 45 | 47 | 42 | 50 | 49 | 43 | 58 | 58 | 62 |
| Croup ... | 12 | 7 | 3 | 5 | 3 | 4 | 6 | 2 | 4 | 5 | 2 | 5 |
| Erysipelas ... | 67 | 53 | 61 | 54 | 60 | 50 | 50 | 47 | 54 | 48 | 54 | 61 |
| Scarlet Fever ... | 104 | 104 | 94 | 92 | 90 | 93 | 87 | 83 | 81 | 98 | 90 | 81 |
| Typhus ... | — | — | — | — | — | — | — | — | — | — | — | — |
| Enteric Fever ... | 37 | 29 | 28 | 28 | 35 | 24 | 32 | 38 | 55 | 74 | 51 | 32 |
| Relapsing Fever.. | — | — | — | — | — | — | — | — | — | — | — | — |
| Continued Fever.. | — | 1 | 2 | — | — | — | — | 1 | 1 | 1 | — | — |
| Puerperal Fever.. | 8 | 6 | 6 | 8 | 8 | 9 | 5 | 6 | 6 | 4 | 2 | 4 |
| Measles ... | 18 | 24 | 31 | 37 | 44 | 53 | 56 | 51 | 44 | 38 | 43 | 28 |
| Whooping Cough | 19 | 26 | 21 | 26 | 27 | 29 | 29 | 37 | 33 | 30 | 33 | 28 |
| Diarrhoea ... | 7 | 10 | 6 | 7 | 6 | 14 | 30 | 67 | 81 | 46 | 13 | 5 |
| Pneumonia .. | 30 | 33 | 31 | 42 | 34 | 24 | 21 | 19 | 17 | 30 | 23 | 41 |
| Influenza ... | 32 | 40 | 41 | 51 | 30 | 18 | 14 | 11 | 20 | 26 | 45 | 78 |
| Chicken Pox ... | 15 | 15 | 20 | 16 | 21 | 20 | 18 | 5 | 8 | 16 | 14 | 8 |
| Mumps ... | 2 | 4 | 6 | 7 | 5 | 6 | 5 | 5 | 6 | 8 | 15 | 12 |
| German Measles | 2 | 3 | 1 | 2 | 2 | 1 | 1 | — | 1 | 1 | — | — |
| Lead Poisoning... | 2 | 1 | 1 | — | — | 2 | — | 1 | 1 | 1 | — | 1 |

Hospital Isolation.—Reference has already been made to the progress of hospital construction throughout the Riding, and to the views expressed in the Reports on the efficacy of such means of isolation. In Table III. (see end) will be found details as to number, kind, and distribution of the cases removed to the various hospitals during 1906, the totals of which were as follows :—

| | Total cases notified. | Cases removed to Hospital. | |
|-------------------|-----------------------|----------------------------|-----------------|
| | | Number. | Proportion. |
| Small-pox ... | 3 | 3 | 100·0 per cent. |
| Scarlet Fever ... | 6530 | 3793 | 58·1 „ |
| Diphtheria ... | 1602 | 584 | 36·5 „ |
| Enteric Fever ... | 955 | 459 | 48·1 „ |
| Total ... | 9090 | 4839 | 53·2 „ |

The proportion of cases removed to hospital was greater than ever before and, except for small-pox, the actual totals isolated were greater than previously. As regards scarlet fever there has been much discussion on the question of the effectiveness of hospitals and this discussion will have been beneficial if, as seems likely, it leads to the general adoption of greater precautions in the administration of infectious hospitals and especially in regard to the discharge of recovered patients. Many of the medical superintendents have, at my suggestion, adopted the system of communicating with the parents of children who are discharged from the scarlet fever wards, by sending a notice in the following terms :—

To Parents, Guardians and others.

Although every care is exercised to prevent the carriage of infection by persons discharged from the hospital, it is impossible in some instances to insure against such an accident, for no one can say with certainty how long the scarlet fever poison may lurk in the system. Parents and others are warned against allowing recently discharged patients to come into unnecessarily intimate contact with others. No person discharged from a Fever Hospital should be allowed to sleep in the same bed as another until at least a fortnight after such discharge. A short holiday, spent as far as possible apart from others and in the open air, is always desirable for persons convalescing from scarlet fever. But all persons recovering from scarlet fever should be warmly clothed, and otherwise protected against cold. Any recently discharged person who complains of sore throat, nose or ears, or who has a breaking-out on the skin, should be at once isolated and placed under the care of a medical man and reported to the Medical Superintendent. In any case the Authority cannot accept responsibility or liability for the outbreak of infection occurring among the companions of persons recently discharged from hospital.

Water Supply.—Although there are in the West Riding very few instances of great hardship arising from want of a water supply, there are many points which, owing to their elevated or outlying position, do not possess at all seasons a satisfactory supply. In a number of these cases it is not feasible to carry mains to the places, but the Sanitary Authority could do

something to cause owners to improve the existing means of supply. There are other places, however, where more comprehensive action is needed in the way of extending mains or providing an entirely fresh scheme. In the appended list of inadequacies as given in the various reports for 1906 attention might be specially directed to the remarks opposite the following districts,—Bolton-on-Dearne, Goole R., Handsworth, Keighley, Kiveton Park, Rawmarsh, Swinton, Tickhill, Wombwell. Where the name of a district is given in *italic* print it means that the deficiency has been noted in previous reports and has remained unremedied. Sanitary Authorities should not require reminding that the neglect of matters concerning water supply strikes directly at the foundations of public health, and, when inadequacies are pointed out by the officers year after year, a very serious responsibility rests upon the Authorities.

I ought to mention that the reports contain references to an equally long list of extensions and improvements of water supply carried out during 1906, but considerations of space prevent me from giving more than the list of deficiencies, as follows :—

| Sanitary Districts. | Inadequacy. |
|---|--|
| <i>Ardsley East and West</i> ... | Occasionally in the Fall district |
| <i>Barkisland</i> ... | ... Ripponden Bank, Village. Slack, etc. |
| <i>Barnsley R.</i> ... | ... Notton Green, in prolonged drought |
| <i>Birkenshaw</i> ... | ... Maize Brook ; five houses |
| <i>Bolton-upon-Dearne</i> ... | ... Goldthorpe very badly supplied at times owing to want of pressure |
| <i>Darfield</i> ... | ... A few isolated houses |
| <i>Denby and Cumberworth</i> ... | Sometimes at Kirkstyles |
| <i>Doncaster R.</i> ... | ... Adwick-le-Street, Armthorpe, Askern, Awkley, Barnsboro', Barnby Dun, Braithwaite, Cadeby, Edlington, Wad- worth |
| <i>Goole R.</i> ... | ... Snaith, Hooke, Swinefleet |
| <i>Great Ouseburn R.</i> ... | ... In several villages. At Green Hammerton water impure |
| <i>Gunthwaite and Ingbirch- worth</i> | Isolated Farms |
| <i>Halifax R.</i> ... | ... A few isolated places |
| <i>Handsworth</i> ... | ... Bartle Road and Hurlfield, Gleadless. Mains not laid |
| <i>Hebden Bridge</i> ... | ... In dry summers from private supplies. |
| <i>Horsforth</i> ... | ... West End |
| <i>Hoylandswaine</i> ... | ... Hill Top and Greenside in dry weather |
| <i>Hunslet R.</i> ... | ... Skelton Moor, Templenewsam |
| <i>Hunsworth</i> ... | ... The isolated Smith's Cottages, Whitehall Road and Lodge Farm. |
| <i>Keighley B.</i> ... | ... Hainworth supplied by shallow wells |
| <i>Kirkheaton</i> ... | ... Only a few isolated houses |
| <i>Kiveton Park R.</i> ... | ... Anston, Woodsetts, Firvale. Wales par- ticularly |
| <i>Knaresborough R.</i> ... | ... Scotton |

| Sanitary Districts. | Inadequacy. |
|--------------------------|--|
| <i>Lepton</i> ... | ... A few outside houses |
| <i>Linthwaite</i> ... | ... Hollins Row. Lane Top and Royd's House |
| <i>Liversedge</i> ... | ... Alleged to be at Norristhorpe |
| <i>Luddendenfoot</i> | ... Private supply, not satisfactory in dry seasons |
| <i>Midgley</i> ... | ... In some parts during dry weather |
| <i>New Mill</i> ... | ... Victoria, too elevated |
| <i>Oxenhope</i> ... | ... In some parts at certain times of year |
| <i>Pateley Bridge R.</i> | ... An increased supply advisable |
| <i>Penistone</i> ... | ... Cubley |
| <i>Penistone R.</i> | ... Thurgoland and Green Moor during summer months |
| <i>Pontefract R.</i> | ... Brotherton |
| <i>Rawmarsh</i> ... | ... Upper and Lower Haugh, Rycroft, and Sandhill |
| <i>Ripon R.</i> ... | ... Mickley |
| <i>Rotherham R.</i> | ... Wickersley in Summer |
| <i>Saddleworth</i> ... | ... In higher parts of district |
| <i>Selby R.</i> ... | ... Cawood especially |
| <i>Shelley</i> ... | ... Woodhouse occasionally |
| <i>Southowram</i> ... | ... Brookfoot |
| <i>Soyland</i> ... | ... Royd Lane, Unity Terrace, but they have the option of public supply |
| <i>Stanley</i> ... | ... Newton Hill and Outwood Church |
| <i>Stocksbridge</i> ... | ... Outlying parts of district in dry weather |
| <i>Swinton</i> ... | ... Twelve hours average supply throughout the year |
| <i>Tadcaster R.</i> | ... Scholes, Barwick, Sherburn, and South Milford |
| <i>Thurstonland</i> | ... Top o' th' Hill, Top o' th' Bank, and Schools |
| <i>Tickhill</i> ... | ... Yes (generally) |
| <i>Todmorden B.</i> | ... Private supplies, at times irregular |
| <i>Todmorden R.</i> | ... Private supplies in dry Summers |
| <i>Wakefield R.</i> | ... Higher parts of Warmfield |
| <i>Wetherby R.</i> | ... Kirkby Overblow, Spofforth, Tockwith, Wighill. Wells polluted |
| <i>Wharfedale N.</i> | ... Brearey Arthington |
| <i>Wharfedale S.</i> | ... Eccup and certain farms on the Cookridge Estate. Bramhope and Carlton during the drought |
| <i>Wombwell</i> ... | ... Inadequate throughout whole district |
| <i>Wortley R.</i> ... | ... Upper part of Grenoside |

In reporting to the Bolton-on-Deerne Council, Dr. Burman says,—
 “The way in which the Deerne Valley Water Company have supplied
 “water to your district during the year has been most unsatisfactory. It has
 “frequently been turned off without any notice, or, to speak more correctly, has
 failed to reach the tap on the sink.”

Insufficient pressure at Eastburn in the Keighley Rural District has been overcome by cleaning out the mains, the work being undertaken by the British Patent Tube Cleaning Co. At Conisborough, in the Doncaster Rural District "there are many instances of the single-tap-in-yard method of supply," which, Dr. McLean urges, should be replaced by a supply to each house.

Dr. Trotter advises the New Mill Council to insist on water being put into 40 houses at Scholes and Scholes Moor, and 17 houses at Hepworth, which are dependent on shallow wells; he writes,—“At both places the sub-soil is very porous, and the natural supplies are liable to contamination, indeed, some sunken wells have, in the past, been found to be acting simply as cesspools.”

Thurgoland and Crane Moor, in the Penistone Rural District have often figured in the list of inadequacies, and this year Dr. Brooks reports,—“throughout the summer the water supply has been very scarce, and often of bad quality.” Bolton-by-Bowland is still wanting a supply, and in parts of Greasbrough wells are in use, some of which are so polluted as to be a source of danger.

In the Horsforth report Dr. Bailey writes,—“There is still evidence of “the need of dealing with the farmyard drainage on the gathering grounds, a “scheme for which is now being considered by the Waterworks Committee. “During the year better protection against pollution from the road of the Beck “at Bayton Bridge has been made, the stream being conducted under the road “through large iron pipes.”

Lead Poisoning.—The natural tendency of many West Riding supplies to dissolve lead makes it necessary to keep an eye on this subject. The following are the affirmative replies to a question in Table C (attached to the Annual Reports) as to whether there have been any complaints regarding the action of the water on lead.

| | | |
|----------------|-----|---|
| Batley B. | ... | .. Yes, occasionally |
| Gomersal | ... | ... Some slight action |
| Hipperholme | ... | ... Still plumbo-solvent |
| Luddendenfoot | ... | ... In one case only |
| Mexborough | ... | ... In four cases from Well supply. Town supply absolutely free. |
| Mytholmroyd | ... | One (lead pipe from main) |
| Ossett B. | ... | ... Yes |
| Saddleworth | ... | ... Yes |
| Shipley | ... | ... One complaint, <i>re</i> case attributed to lead poisoning by medical man, 1/50th of a grain of lead found in water |
| South Crosland | ... | ... Slight action. No complaints |
| Todmorden B. | ... | ... Yes, a few complaints |
| Wortley R. | ... | ... One private supply gave rise to cases of lead poisoning |

The above list would be very much greater but for the fact that most of the large water authorities have seen the necessity of applying some form of preventive treatment to the water before distribution. In one or two reports from districts where this is not done, it is suggested that lead piping should be prohibited. This is the view taken by Dr. Greenwood, of Ossett, who mentions the occurrence of several cases of lead poisoning, and says:—"I can point to "two cases in which the bread-winner of the family, being no longer able to "work, has been obliged to apply to the Poor Law Guardians for relief. It "must therefore be evident to you that some steps ought to be taken to lessen "or abolish this preventable disease."

At Todmorden, the public supply is effectively treated, but there are private supplies of a plumbo-solvent character, and Dr. Thorp writes,— "At Thornesgreece, where there were many cases of lead poisoning on "land belonging to the Rochdale Corporation, drawing their water from "Inchfield pasture, nothing has been done as yet to remedy the evil." In the Saddleworth District, "several people have suffered from lead poisoning, "whilst others have shown the typical blue line on the gums. The water "supply is therefore anything but satisfactory."

At Queensbury,— "Last summer many cases of this kind arose probably "from the 'softer' nature of the water the result of the continued dry weather." The following cutting from the Wortley Rural District is of interest:—"Four members of a family suffered from lead poisoning, and "those most markedly who were in the habit of drinking tea in the morning "infused with water drawn from the hot water tap. This is by no means an "uncommon habit, though a distinctly dangerous one where lead-lined cisterns "are used for supplying the hot water apparatus."

Sewerage and Drainage.—I again present a list of places where it is mentioned that there is need for new sewers. Where the name of the district is printed in italic letters, the inadequacy has appeared in previous annual reports, and one cannot help thinking that in some of these cases the delay in dealing with the matter has been greater than is justified by the difficulties of the situation.

| Sanitary District. | Inadequacy. |
|---------------------------------|---|
| <i>Altofts</i> ... | ... Fenley Villas, Foxholes |
| Ardsley, East and West ... | Westerton, Top of Common and Lingwell Gate |
| <i>Barkisland</i> ... | ... No Sewers |
| <i>Barnoldswick</i> ... | ... Bancrofts and Gillions |
| <i>Bingley</i> ... | ... Wilsden Hill, Harden Moor Edge, and parts of Cullingworth |
| <i>Birstal</i> ... | ... Howden Clough |
| <i>Bolton-on-Deerne</i> ... | ... Highgate |
| <i>Brighouse B.</i> ... | ... Portions of Rastrick |
| <i>Burley-in-Wharfedale</i> ... | ... Portion of Station Road |
| Denby and Cumberworth ... | Denby Dale |
| <i>Drighlington</i> ... | ... Back Lane and Whitehall Road |
| <i>Elland</i> ... | ... Church Lane, Elland Lower Edge |
| <i>Emley</i> ... | ... Church Street |

| Sanitary District. | Inadequacy. |
|--------------------------|--|
| Flockton ... | ... Haigh Lane, Flockton Green |
| Golcar ... | ... Bolster Moor, Scar Lane |
| Gomersal ... | ... Birdacre, Bleak Street, Park Street, Lower Spen |
| Great Ouseburn Rural ... | ... Green Hammerton |
| Gunthwaite ... | ... Main sewer should be extended |
| Halifax R. ... | ... To some extent in all the districts |
| Handsworth ... | ... Badly ventilated |
| Hipperholme ... | ... Mytholm district |
| Holmfirth ... | ... Boothouse, Higgin Bridge, Wooldale |
| Horsforth ... | ... West End and Calverley Lane |
| Hunslet R. ... | ... Halton Gill |
| Hunsworth ... | ... Part of East Bierley, Hunsworth Lane, Toftshawmoor side, Moorlands |
| Keighley R. ... | ... Stockbridge |
| Kiveton Park R. | ... Harthill, Anston, Firvale, Woodsetts, Wales, Dinnington |
| Knaresborough R. | ... Burton Leonard |
| Liversedge ... | ... Victoria Road, Hindley Road, and in some private streets |
| Luddendenfoot ... | ... In some parts |
| New Mill .. | ... Hade Edge and Flowery Field |
| Ossett B. ... | ... Healey |
| Penistone ... | ... Bridge End |
| Penistone R. | ... West View, Silkstone, and Huthwaite Lane |
| Pontefract R. | ... Ferrybridge and Carr Lane, Glasshoughton |
| Ripon R. ... | ... Markington, Bishop Monkton and Mickley |
| Saddleworth ... | ... Saddleworth Fold |
| Sandal Magna ... | ... Newmillerdam |
| Selby ... | ... Andas Street |
| Selby R. ... | ... Cawood |
| Shipley ... | ... Here and there |
| Slaithwaite ... | ... Brookside |
| Soothill Upper | ... Want of main sewer from Grange Road to Heybeck |
| Soyland ... | ... Only one sewer |
| Stanley ... | ... Lingwell Gate, Lee Moor ; Stanley Ferry |
| Swinton ... | ... In one or two streets |
| Tadcaster R. | ... Old Micklefield |
| Thurlstone ... | ... In some isolated parts. |
| Tickhill ... | ... Old brick sewer, Castlegate |
| Wakefield R. | ... Jackson Hill, Shitlington |
| Wath-on-Dearne | ... Barnsley Road |
| Wetherby R. | ... Bramham, Clifford, East Keswick, Shadwell, Spofforth, Thorparch, Weeton. |
| Wharfedale Rural N. | ... Nessfield. |
| „ „ S. | ... Bramhope Moor |
| Whitley Upper | ... New Inn |
| Yeadon ... | ... Back Club Row and Queen Street |

I could present an equally long list of improvements and extensions carried out during the year, but probably no useful purpose would be served. Many reports refer with pleasure to the better sanitary conditions produced by such improvements, thus at Dringhouses, in the Bishopthorpe Rural District, Dr. Raimes reports that "the sewerage has now been completed, and apart from the necessary increase in the rates, has been hailed with delight. It is, so far as we can judge, a complete success, and in place of the offensive village beck we have now a clear stream—this is of the greatest value from a health point of view. I hope in due course the rest of your villages will be similarly dealt with."

Numerous references are made to nuisances caused by the malodorous emanations from the sewer man-holes in various districts, and there seems to be an almost unanimous demand for increased ventilation of sewers by means of suitable upcast shafts. Dr. Trotter, however, in the Honley report thinks that numerous direct connections between the sewer and the open air are desirable, and even if they be at the ground level, he anticipates no danger to health, provided that such openings are not in shielded or enclosed positions near to dwellings.

At Morley, Dr. Steele thinks that a trial might be made of ventilating the sewers by means of the mill furnaces. He points out that "the uneven contour of the district, being alternate hills and depressions, on which Morley is built, facilitates the collection of gases and increases the difficulties of efficient ventilation."

At Normanton, "in certain atmospheric conditions, especially after a long dry period as experienced during summer, sewer gas escapes and is strongly in evidence, but the difficulty is receiving the attention of the Council and it is almost certain that there will be no cause for complaint in the near future."

In the Horbury District, "several complaints have been made of the offensive smell arising from the manholes in the district, more especially those situated at Shepstye Road, Back Lane, and one at the top of Bulling Baulk Lane."

At Harrogate, all the foul manholes have been stopped up, and 22 ventilating shafts have been erected. The erection of such shafts during 1906 is also mentioned in the following reports,—Birkenshaw, Hunsworth, Knaresborough Rural, Oakworth, Stanley, and Wath-on-Deerne.

The existence of foul manholes is admitted in the reports from the following districts,—Ardsley East and West, Clayton West, Darfield, Hipperholme, Knottingley, Leeds Rural, Liversedge, Penistone Rural, Stocksbridge.

With regard to *sewage disposal* it is evident from the frequent references to works newly constructed, extended, or modified, that there is no diminution of activity under this head. The installation and extension of the bacterial system is a prominent feature. In 53 reports it is recorded that crops of one kind or another are grown on the sewage plots. Reference is made to the unabated nuisance arising from polluted rivers in the reports for Altofts, Swinton and Wakefield.

Closets and Refuse Receptacles.—It may seem unnecessary to declaim annually on the iniquities of the old fashioned privy midden system, but it is impossible to review the Reports without devoting considerable attention to the numerous and convincing charges which are brought against this system of conserving offensive matter in close proximity to dwellings. It is impracticable to give a list of the districts where this system prevails, because it is very general throughout the Riding, and although every year sees many of the worst privy middens reconstructed on modern lines, the effect on the total is small. During 1906, there were 4,168 new closets erected, of which 3,138 were on the water-carriage system. It is also mentioned that 2,889 old privy middens were re-constructed.

The following quotations from the reports are given merely as samples, and not by reason of their representing the worst districts:—Baildon,—“Many of the ashpits are too large, often several feet below the ground level, sometimes lying more than a foot under water, quite inaccessible, and the contents often require two or three “shovellings” before it can be placed in the cart.” Dr. Macvie thinks, however, that “much improvement has been made with several such ashpits during the year, a number more are in hand, and I hope, in a short time, to be able to report that no such conditions as I have described exist at all.”

Ardley,—“Many of the ashpit closets were in a very insanitary condition, the walls inside requiring plastering, and pointing, and apparently not having been limewashed for years. The ashpit gratings are also in a few localities in a very dilapidated condition, and the ashpits themselves full of tin-cans and broken crockery. Litter and rubbish of all kinds are thrown at the back of the ashpits, and saturated at frequent intervals by house slops.”

Hoyland Nether,—“Many of our people have only a corner of the yard in which to deposit the house refuse, and if this is left for weeks together without removal it is both unsightly and insanitary.”

Thurlstone,—“I reported during the year a large number of cases when the state of the privies and ashpits was very insanitary. Some of these were old privies in a bad state of repair, and others were cases where the ashpit floors were below the level of the ground, allowing liquid to stand in them. There was also in many cases deficient privy accommodation; in some cases there being only one privy to four houses. Nothing has been done to remedy the cases I have pointed out during the year, but notices have been sent to most of the owners of the property.”

Calverley,—“Ashpits are not receptacles for decaying vegetables, dead cats, kittens, dogs, human excreta, and slops, and that the streets are not to be used as privies. I have seen with my own eyes, and have been told by the Scavenging Department that the ashpits contain the above-mentioned things, together with large quantities of water, that the sides of some of the streets are little more than dung hills, and even the grates in the middle of the streets have been used as a place for depositing slops containing human excreta.”

Hipperholme,—“The relatively high incidence of infectious disease at Bailiffe Bridge is, in my opinion, maintained by this privy-midden system existing in back-to-back property, and in a somewhat condensed area.”

Scavenging.—From what has been said about the refuse receptacles it will be gathered that the scavenging is no easy matter. All the more important, therefore, that it should be in the hands of people who have no inducement to shirk it. This is best carried out by the direct servants of the Sanitary Authority, which is the method employed in 86 Urban Districts of the Riding. In 29 other districts, the work is let out to contractors, and in the remaining 16 Urban Districts, the owners and tenants are left to empty the middens as and when they like. As regards Rural Districts, the condition of things varies in the different centres of each district, but many of the more populous villages have by this time a system of public scavenging. The following list gives in a condensed form the affirmative replies to a question attached to the annual reports asking whether there be any inadequacy in the scavenging :—

| | |
|-------------------|---|
| Barkisland | ... No regular system |
| Bolton-on-Dearne | ... Poorly attended to at Goldthorpe |
| Holmfirth | ... Night soil removal not satisfactory |
| Knottingley | ... Got behind with work in the summer |
| Midgley ... | ... General complaints owing to unsystematic emptying |
| Morley B.... | ... No. Should be done during the night |
| Oakworth ... | ... Complaints as to improper scavenging |
| Penistone ... | ... Railway Terrace and Castle Green |
| Pontefract... | ... Unsatisfactory |
| Saddleworth | ... Greenfield |
| Skelmanthorpe | ... Present contracting unsatisfactory at times |
| Slaithwaite | ... More attention required |
| Southowram | ... Inadequate all over District |
| Soyland ... | ... No regular system |
| Swinton ... | ... Frequent complaints as to state of middens |
| Thurlstone | ... Yes, in out districts when tenants have to do it |
| Tickhill ... | ... Suggested Public Scavenging |
| Whitley Upper | ... General Inadequacy |
| Yeadon ... | ... Inadequacy in Ashpit Scavenging |
| Bowland R. . | ... Grindleton |
| Goole R. ... | ... Rawcliffe and Rawcliffe Bridge |
| Great Ouseburn R. | ... Boroughbridge |
| Halifax R. | ... Fixby and Norland owing to scattered houses |
| Keighley R. | ... Public Scavenging throughout advisable |
| Leeds R. ... | ... No, except in a few cases contracted for privately |
| Pateley Bridge R. | ... Not satisfactory, ought to be undertaken by Council |
| Penistone R. | ... Yes, Crane Moor, require more frequent removal |
| Skipton R. | ... Carleton, Cononley, Bradley, Embsay and Grassington |
| Tadcaster R. | ... Allerton especially |
| Wetherby R. | ... Tockwith, East Keswick, Collingham, Huby |

The foregoing list could be elaborated by a detailed description of some of the grievances. Thus at Holmfirth, where the contractor is supposed to empty middens when the householder signs a form of request, Dr. Trotter finds that delay is frequent. He mentions one case where the form was sent on April 24th, and the closet remained unemptied to May 31st. "In yet another case, the form was sent in July, and in October, the occupier informed me that the work had not been done." At Sutton, Morton and Steeton, in the Keighley Rural District, Dr. Atkinson regards the scavenging as still "very unsatisfactory, being dependent upon the householders." At Allerton Bywater, in the Tadcaster Rural District, from which place complaints as to unsatisfactory scavenging by contractors have been received, Dr. Stedman writes,—“I hoped the District Council would have taken the work into their hands and employed their own staff at the expiration of their contracts last August; but the work has now been let for a further period of two years.”

Disposal of Refuse.—After the trouble in the removal or non-removal of the refuse, there comes the question of its disposal. In some places it is carted on to land, in others used for filling up quarries, or waste and low-lying land, while in relatively few districts a proper destructor is available for its disposal. The reports contain strong complaints with regard to both the first-mentioned methods, and by contrast there is nothing but appreciation for the work of the destructors. At Rawmarsh, where the erection of a destructor is under consideration, Dr. Picken regards it as “a very serious matter to plan for depositing all the noxious material from Rawmarsh at one tip for a period of 20 or 30 years comparatively near a growing population without even considering the alternative method.” At Cudworth where the night-soil is carted on to land, Dr. Elliott asks that it be spread 100 feet from the main road, and “not be left there, before being ploughed in, longer than 24 hours. Again, he adds, “some method should be adopted to set fire to all the paper immediately it has been put on the field, and not allow it to fill the hedges and roads as it generally does.”

Dr. Barclay, of Hunsworth, advises the Council “to insist on their contractors depositing nothing but ashes at the tip, and not ashes mixed with domestic sewage. This should be done in order that it would not be a menace to public health.” The Haworth Urban Council are advised by Dr. Atkinson to “consider the provision of a refuse destructor for the District, and this might be so situated as to avoid the present expense of the cartage on to high land.”

At Ilkley,—“Undoubtedly since the erection of our destructor complaints as to removal of refuse, etc., have almost ceased; and with the return of another era of prosperity the initial cost will not be so keenly felt.”

The destructor at Mexborough has consumed 5,237 tons of rubbish during the year and Dr. Huey writes, “I am truly grateful that we have this sanitary safeguard.”

Housing of the Working Classes.—This subject is bound to assume greater and greater importance with the spread of knowledge as to what constitutes a healthy dwelling, and as to the serious effect which insanitary property has on the health, not only of the occupiers, but of the

district generally. The last few years have seen an extensive awakening of public interest in the search for an ideal cottage combining cheapness and comfort with stability and sanitary soundness. Complete success has not yet been attained although there can be no doubt that progress is being made in this direction, and already there is a large amount of valuable information and experience accumulating towards a solution. Meanwhile in almost every district there exist insanitary dwellings which call for improvement on the most elementary lines of reform such as provision of light and ventilation, exclusion of damp by repair of roofs, walls, eavespouts, etc., provision of suitable water supply, drainage, sanitary conveniences, etc. These things should have the steady attention of local sanitary authorities and yet one finds it to be the rule that little reform is going on except in the relatively few cases which have come so prominently before the Authority as to leave them no alternative but action. It is doubtless for this reason that the Parliamentary Select Committee of 1906 were in favour of transferring to County Councils the administration of the law as to the Housing of the Working Classes, so far as Rural Districts are concerned. From the records of 1906 it appears that in 20 out of the 29 Rural Districts of the West Riding no action whatever was taken under these Acts, and the same state of inactivity apparently existed in 108 out of the 131 Urban Districts.

Some of the reports refer to the existence of insanitary houses, but point out that any drastic action would be a hardship on the poor people who occupy them at low rates, and would lead to the overcrowding of the better houses. In the Great Ouseburn Rural District, Dr. Lownds writes :—"I fear little has been done to improve the condition of the houses of the working classes ; in most of the villages there are houses which are scarcely fit for habitation, damp, ill-ventilated cottages, without fireplaces in the bedrooms, and just the houses to breed and spread such diseases as Phthisis. No doubt some of these cottages might be closed with advantage, but until there are some better ones built for the people to occupy we can hardly do so." In similar circumstances in the Doncaster Rural District, Dr. MacLean reports that "properties in an insanitary state have been put into a wholesome condition by means of ordinary nuisance notices, thereby averting action under the Housing Acts." This course may be recommended for adoption elsewhere, as it is obvious that a regular system of house inspection coupled with systematic abatement of all defects as discovered, would effectually *prevent* houses from getting into an uninhabitable condition, and here, as in other matters, prevention is better than cure.

Dr. Baskett remarks that the country labourer's house is as bad, if not worse, than the town labourer's, and that the advantage of the former class of inhabitants consists chiefly in their better outdoor conditions. Yet the country dwelling should be reformed if only on account of the children. Dr. Trotter of Holmfirth, puts the case thus,—“Unfortunately where old houses are to be obtained at low rentals, there is every temptation to let economy in the domestic budget fall upon the rent, and especially is this the case in the most difficult time in the life of the working-class family when the children are many and the workers few ; yet this is also the period when those very children are in an important stage of their development, and require the best possible environment if they are to escape that physical deterioration of which we hear so much.”

It would be invidious to give only a few instances of particular defects of which mention is made incidentally in the reports, but I propose as in former years to give a list of districts where houses unfit for habitation are admitted to exist. Before doing so, however, I must give one quotation to illustrate the necessity of attending to new houses as well as old. It is from the Goole Report, by Dr. Erskine, as follows, —“The streets called the Poets Corner “have many of the houses out of repair at present, have not been painted for “ten years, have broken eaves, and down-spouting, in addition to being badly “built with match-wood doors evidently made with green wood, badly plastered “and the street not made either back or front. Furthermore all these are “comparatively new houses, and in a house in Broadway built during the year “under review, which I inspected recently, the doors and windows fitted badly, “the plaster was coming off, and the fireplaces were loose.” Dr. Erskine adds,—“If a new town like ours is going to have property built in the manner “of the foregoing then we can easily picture what will come in a few years, “and it is not the making of bye-laws that is the remedy; it is necessary to “see that they are carried out.”

In Table C. attached to each Annual Report there is the question “Are there any occupied houses unfit for habitation?” and the following are the affirmative replies. At the desire of the West Riding Sanitary Committee I include in this statement cases mentioned during the year 1904, 5, and 6, and I have endeavoured to show in each instance what subsequent action has been taken by the Authority.

Houses unfit for habitation.—

| URBAN DISTRICTS. | No. of uninhabitable houses and date of report. | Subsequent Action. |
|-----------------------------|---|---|
| Ardsley E. and W. | a few 1906 | ... 1 remedied, 2 not to be re-let |
| Batley | 1 1904 | ... Closed |
| Birstal | 10 1904 | ... 6 demolished, others remedied |
| Burley-in-Wharfedale | 1 1905 | ... Altered |
| Do. | 1 1906 | ... Remedied |
| Cudworth | 1 1904 | ... Remedied |
| Darton | 1 1904 | ... Closed |
| Denby and Cum. | 1 1904 | ... Closed |
| Dewsbury | 2 1904 | ... Closed |
| Featherstone a few doubtful | 1904 | ... Some renovations. Still unsatisfactory |
| Goole | Yes 1904 | ... 8 closed |
| Do. | Yes 1906 | ... 3 closed, some remedied. 1 Block (Mason's Yard) still unsatisfactory |
| Handsworth | 2 1904 | ... 1 closed, 1 repaired |
| Do. | 2 1906 | ... Remedied |
| Haworth | 1 1904 | ... Repaired |
| Holmfirth | Yes 1904 | ... Unoccupied |
| Knaresborough | 4 1904 | .. Being demolished |
| Lepton | 1 1904 | ... Remedy promised |
| Liversedge | 5 1904 | ... Repaired |
| Mexborough | 2 1905 | ... Closed |
| Mirfield | 1 1905 | ... Remedied |

| URBAN DISTRICTS. | No. of uninhabitable houses and date of report. | Subsequent Action. |
|------------------|---|---|
| Morley | Yes 1905 | ... Demolished |
| New Mill | Some 1904 | ... Unoccupied |
| Normanton | 1 1905 | ... Unoccupied |
| Penistone | 1 1904 and 1905 | .. Remedy promised |
| Ravensthorpe | 1 1906 | ... Renovated |
| Rawdon | 5 1904 | ... Unoccupied |
| Rishworth | Yes 1904-5 | ... Remedied |
| Rothwell | 5 1904-5 | ... 3 remedied, 2 unsatisfactory. (Also many others needing attention) |
| Roystone | 6 1906 | ... Works done to order of Magistrates |
| Selby | 8 1904 | ... 3 repaired, 4 demolished, 1 closed |
| Sowerby Bridge | Yes 1905 | ... 2 closed, 6 being altered |
| Springhead | 1 1904 | ... Unoccupied |
| Stanley | 20 1904 | ... 4 repaired |
| | 7 1905 | ... 4 rebuilt, 1 repaired, 2 empty |
| | 1 1906 | ... Unoccupied |
| Stocksbridge | 2 1904 | ... 1 repaired, 1 closed |
| Thornhill | 1 1905 | ... Remedied |
| Thurlstone | a few 1904 | ... Repaired |
| Thurstonland | 1 1906 | ... Unoccupied |
| Tickhill | some 1905 | ... Remedied |
| Wakefield City | Yes 1905 | ... Under consideration by special Com- mittee of Corporation |
| Worsborough | a few 1905-6 | ... 1 being repaired. Many others need attention |

RURAL DISTRICTS.

| | | |
|----------------|----------|---|
| Barnsley | 1 1905 | ... 1 closed. Many more require attention |
| Bishopthorpe | Yes 1905 | ... 2 pulled down, 1 closed |
| Doncaster | Yes 1905 | ... 1 remedied, notices served on others |
| Goole | 3 1904 | ... Repaired |
| Great Ouseburn | Yes 1905 | ... No action because of scarcity |
| Penistone | 2 1904 | ... 1 demolished, 1 closed |
| | 1 1905 | ... No action |
| Ripon | 1 1904 | ... Repaired |
| Sedbergh | 2 1905 | ... 1 remedied, other to be vacated |
| Selby | 1 1904 | ... Repaired. Many others need atten- tion |
| Thorne | 2 1904-5 | ... Closed |
| Wetherby | 1 1904 | ... Unoccupied |
| Wharfedale | 2 1905 | ... 1 closed, 1 remedied |

It will be noticed that nearly all of the cases have been disposed of by closure, demolition, or repair, but it must be obvious to anyone acquainted with the West Riding that the foregoing list includes only a small proportion of those which exist. One of the difficulties of the housing law is that little can be done in this matter by the local officials of small districts without making enemies and increasing the difficulties of their other work. Whenever the County Health Department undertakes the sanitary survey of a district we almost invariably find instances of houses being occupied in an unfit condition as will be seen by referring to the notes on such surveys. In a separate report I propose to give a resume of the action which has been taken in the various districts in consequence of our survey reports, and I think it will show that great improvement in housing can be effected if requirements are either pointed out by an outside Authority, or brought to light through systematic house-to-house inspection, the results of which are duly recorded and laid before the meetings of the Sanitary Authority

Factories and Workshops.—The references to this subject in the reports under review are, for the most part, statistical. There is a remarkable absence of any complaint as to the effect of employment on health or as to any grossly improper or insanitary conditions of labour. In one or two reports mention is made of nursing mothers leaving their children to work in the factories, but so far as I can ascertain, this custom does not prevail to any considerable extent in the West Riding.

The following tables summarise the figures which have been abstracted from the 160 reports of medical officers. They show that nearly 8,000 inspections of various places of employment have been made by the local sanitary officials during the year. The defects noted have been chiefly in respect of want of cleanliness and ventilation, but it is satisfactory to observe that these were promptly remedied and no prosecutions became necessary.

The figures as to “Outworkers” seem to be somewhat meagre and one cannot help thinking that in many districts the returns are incomplete, as there must be more than 81 employers in the Administrative County, who give out work of the specified kinds to be done at the workers’ home.

WEST RIDING ADMINISTRATIVE COUNTY.

Total Number of Workshops on Registers (1906) = 6042

| | Factories. | Workshops. | Workplaces. | Homeworkers’ Premises. |
|--------------------------|------------|------------|-------------|---------------------------|
| Total Inspections made | — 1533 | 5730 | 292 | 284 |
| „ Written Notices served | 76 | 154 | — | 5 |
| „ Prosecutions | — | — | — | — |

The following is a classification of the defects found :—

| Particulars. | Number of Defects. | | | Number of Prosecutions. |
|---|--------------------|----------|-----------------------------|-------------------------|
| | Found. | Remedied | Referred to H.M. Inspector. | |
| <i>Nuisances under the Public Health Acts :—</i> | | | | |
| Want of Cleanliness | 105 | 101 | ... | ... |
| Want of Ventilation | 27 | 21 | ... | ... |
| Overcrowding | 5 | 5 | ... | ... |
| Want of Drainage of Floors | 1 | 1 | ... | ... |
| Other Nuisances | 72 | 71 | ... | ... |
| Closets Insufficient | 59 | 41 | 1 | ... |
| „ Unsuitable or Defective | 108 | 107 | 1 | ... |
| „ Not Separate for Sexes | 38 | 29 | 2 | ... |
| <i>Offences under the Factory and Workshop Act :—</i> | | | | |
| Illegal Occupation of Underground Bakehouse (S. 101) | 5 | 2 | ... | ... |
| Breach of Special Sanitary Requirements for Bakehouses (SS. 97 to 100) | 2 | 2 | ... | ... |
| Other Offences (see also under Homework) | 4 | 2 | 2 | ... |
| Total offences | 426 | 382 | 6 | ... |

HOME WORK :—

| | |
|--|-----|
| Total No. employed as out-workers | 260 |
| Total No. of employers of out-workers | 81 |
| No. of inspections of out-workers' premises | 284 |

OFFENCES IN REGARD TO HOME WORK :—

| | Instances. | Notices Served. | Prosecutions. |
|--|------------|-----------------|---------------|
| Failing to keep or send lists | — | — | — |
| Giving out work to be done in premises which are | | | |
| Unwholesome. | 5 | 5 | — |
| Infected | 1 | — | — |

It is very desirable that medical officers should enquire as to whether out-workers are employed in the district, and should bring specially to the notice of such employers the requirements of Sections 107 to 110 of the Factory and Workshop Act. As has been pointed out it is extremely important that “homework” should be brought under supervision because it offers such facilities for unhealthy and unwholesome conditions of employment, propagation of disease and infectious sickness. The specified kinds of work

which constitute "homework" when given out by employers to be done in the workers' dwellings are as follows :—

- Making, cleaning, washing, altering, ornamenting, finishing and repairing of wearing apparel.
- Making, ornamenting, mending and finishing of lace, and of lace curtains and nets.
- Cabinet and furniture making and upholstery work.
- Making of electro-plate.
- Making of files.
- Fur-pulling.
- Making of iron and steel cables and chains.
- Making of iron and steel anchors and grapnels.
- Making of cart-gear, including swivels, rings, loops, gear buckles, mullin bits, hooks and attachments of all kinds.
- Making of locks, latches and keys.
- Making or repairing of umbrellas, sunshades, parasols, or parts thereof.
- Making of artificial flowers.
- Making of nets, other than wire nets.
- Making of tents.
- Making or repairing of sacks.
- Covering of racquet or tennis balls.
- Making of paper bags.
- Making of boxes or other receptacles or parts thereof made wholly or partially of paper, cardboard, chip, or similar material.
- Making of brushes.
- Pea-picking.
- Feather sorting.
- Carding, boxing, or packeting buttons, hooks and eyes, pins and hair pins.
- Making of stuffed toys.
- Making of baskets.
- Any processes incidental to the above.

Nuisances and General Sanitary Inspection.—

Reference is made in the reports to the discovery and remedying of no less than 18084 "nuisances." This large figure would be much greater if every district kept proper records of the work done (as required by the Order of the Local Government Board). It would still further be increased if every inspector carried out routine house-to-house inspection as is contemplated by Article 3 of the Order which reads as follows :—"He shall by inspection of the district, both systematically at certain periods and at intervals as occasion may require, keep himself informed in respect of the nuisances existing therein that require abatement." Such house-to-house inspection is said to be made systematically in 73 districts, in 26 other districts it is done when occasion permits, and in 61 districts there is no house-to-house inspection at all.

In a large number of districts no proper record is kept of the inspections made, and in this way, not only do the Authorities remain ignorant of good work done, but the officials themselves lose sight of numerous cases which only require perhaps a little further pressure to bring them to a satisfactory conclusion. A very good system has been adopted in the Kiveton Park District since that area was surveyed by the County Health Department. Dr. Wills writes—"It was arranged that your Inspector and I should look through a village every month, so that nuisances from drains, the condition of cow houses, slaughter houses and other matters should be brought before you at the Monthly Meetings, being entered on the Report Book of the

“Inspector, for your instructions, after the owner or agent of the property, or the person causing nuisance had been interviewed, since it is mostly found that more satisfactory work of reform can be obtained by enlisting the interest of those concerned.”

Several medical officers refer with displeasure to the fact that a large stock of nuisances is kept on hand owing to the activity in remedying them not being able to keep pace with the discovery of new ones. Altogether there were 2,672 unabated nuisances on hand at the close of the year. Of these 501 were at Keighley and 675 in the Wetherby Rural District. Dr. Hargreaves, in the report for the last-named district, writes,—“There are still many unabated nuisances on record. There were 676 in hand at the close of 1905. In 1906, 139 new ones have been reported, 140 have been abated leaving 675 unabated at the close of 1906. For some time past it has been apparent that the duties devolving upon your Inspector of Nuisances and Surveyor are more than one man can efficiently perform; the extensive area of your district and the number of parishes render it difficult of supervision. The special work to be carried out in respect to Workshops, Cowsheds, Slaughter Houses, Schools, New Buildings, etc., is of a much more exacting nature than was the case a few years back, and demands much more frequent attention on the part of your inspector. I am of opinion that your Council would be wise either to appoint an Assistant Inspector, or to divide your district into two parts with an Inspector in charge of each.”

Dr. Huey points out that a large proportion of the nuisances at Mexborough are caused by sheer disregard of ordinary care in dealing with the domestic sanitary contrivances which are not the property of the tenants.

During the year, 2,814 sink-waste pipes were disconnected and 2,430 trapped.

Paving of Yards, Streets, etc.—In the inspection work just referred to, special attention should be given to the sanitary condition of back yards, as it is so commonly the case for the back yard to be in a condition which discounts all efforts at household cleanliness. In all industrial centres it is important to obtain a smooth impervious and properly graded area surrounding the dwellings, and where this has been done there is universal commendation of the plan. Its benefits have been specially noted in the reduction of infantile diarrhoea and the promotion of general cleanliness. At Denaby Main over 5,000 square yards of asphalt were laid during the year in back streets, and the total number of houses there with asphalted yards is 918. In the Stanley District, reference is made to the accumulation of fowl-pens, etc., in proximity to houses, and the same thing is animadverted upon by Dr. Townsley in the report for Ardsley, near Barnsley, who says:—“Many unsightly wooden fowl-houses are erected in some back yards, and as the fowls and ducks are allowed to wander at will, the condition of the surface of such yards is not very pleasant. The most objectionable features are generally to be found in the open common yards, a condition which lends itself to neglect, and what is everybody’s business is nobody’s in particular, and so the whole community suffers.” In the neighbouring district of Darfield, the medical officer refers to the throwing of all kinds of

refuse and offal on to the roads. At Knottingley, Dr. Percival laments that "nothing practical has yet been done to carry out improvements of the private roads in Primrose Hill, The Croft, and the Holes. During the severe weather we have had this winter they have been in a very bad state, often ankle deep in mud, which is not good for the children attending the schools in their vicinity." In Handsworth, "Many private streets are disgraceful." At Hoyland Nether, Dr. Allott thinks that "if something could now be done to improve the insanitary condition of many of the large back yards in connection with some of our slum property it would be very beneficial." He further points out, "if we do not try to improve the miserable environment of many of our people we cannot with the same amount of assurance call upon them to do their part." At Skipton, and also at Knaresborough, immense improvement has followed by the removal of the ancient cattle markets from the streets to properly arranged areas. At Goole, the paving of back streets has relieved the drains and sewers from large quantities of ashes and debris, which previously were washed down the grates.

Dairies, Cowsheds, and Milkshops.—The year 1906 was marked by several forward movements in the direction of a perfectly satisfactory milk supply. The West Riding Sanitary Committee took up the question of the adoption and enforcement of Regulations under the Dairies, Cowsheds, and Milkshops Orders, and as a result of pressure by them it is now a fact that Regulations are in force in every district of the Riding with only 9 exceptions. Probably no part of the country is so well equipped.

But the possession of Regulations is of little use if they are allowed to be forgotten as they undoubtedly are in some districts. To serve as a kind of reminder the Committee issued in June, 1906, some thousands of placards containing the following brief directions, and it was arranged for local officers to paste one up in every cowshed and dairy.

" RULES FOR MILKERS."

" Let cleanliness be the Motto in everything connected with the production of Milk :

" *Cowshed*—Clean walls, ceilings, floors, window-bottoms, and corners

" *Animals*—Clean haunches, udders and teats

" *Cowman*—Clean hands, overalls, and cap when milking

" *Utensils*—Clean cans, utensils, milking stools, &c.

" Don't keep the milk vessels in the cow-house

" Don't mix the milk of a poorly cow with the milk which is intended for sale

Nearly all the reports for 1906 mention the fact of these notices being so distributed and there are many appreciatory remarks. Although it is to be feared that few milkers literally follow the Rules, there is no doubt that they have caused a great many to give to the matter some little thought which cannot fail to be fruitful.

Considerable revival has also taken place amongst officials in the matter of cowsheds, as may be gathered from the statement that the number of recorded inspections rose from 7,525 in 1905 to 9,029 in 1906. Mention is made in many of the reports of special inspections being carried out by the local officials. In the Hipperholme district, an excellent custom prevails for

a Committee of the Urban Council to make a tour of the Cowsheds annually, while at Keighley the Veterinary Inspector of the Corporation examines all milk-cows three times a year. There is no reference in any of the reports to any of the County Boroughs having exercised their powers to visit cowsheds in the Administrative County. The following list shows for certain districts the remarks of the local Medical Officer of Health in answer to the question as to the general condition of the cowsheds in the locality :—

| | |
|---------------|--|
| Barnoldswick | ... Bad for most part |
| Birkenshaw | ... Some require re-construction |
| Cudworth ... | ... Badly adapted and ill-ventilated buildings |
| Dewsbury B. | ... Some unsatisfactory |
| Haworth ... | ... Much improvement necessary |
| Holmfirth ... | ... Fair to poor |
| New Mill ... | ... Mostly defective |
| Normanton | ... Unsatisfactory |
| Pudsey B.... | ... Some fair, others need improving |
| Rawdon ... | ... Varies from good to very poor |
| Rawmarsh | ... Not up to requirements |
| Skipton ... | ... Indifferent |
| Stainland ... | ... Indifferent in outlying places |
| Swinton ... | .. Some good, others require improvements |
| Yeadon ... | ... Room for further improvements |
| Goole R. ... | ... Unsatisfactory generally |
| Hunslet R. | ... Want of cleanliness in some cases |
| Penistone R. | ... Several dirty, requiring improvement |
| Rotherham R. | ... Unsatisfactory |

In addition to the foregoing list, the reports of these and other districts contain numerous and extensive references to the general need for observing a better standard of cowshed hygiene. In an inspection made by the medical officer for the Thorne Rural District, Dr. Arbuckle, "it was noticed that the "cowsheds were dirty in seven, moderately clean in six, and clean in five. In "one case pigs were kept in the same shed as the cows." In the Rotherham Rural District, "the majority of the cowsheds are dirty, and badly lighted and "ventilated. The drainage of the shed, as a rule, flows on to the surface of "the yard. The manure from the shed is often allowed to stand for weeks "just outside the shed door until it is utilized on the land." Dr. Chamberlain, of Rawdon, writes,—“I have made an inspection of the cowsheds but I "have no improvement in their condition to record.” In many parts of the Sowerby District "one noticeable feature is the tendency to house the cows "wedged in with hay, all openings for ventilation being sealed up, with the "result that the atmosphere in the cow-houses is like a hot-house. There "seems to be a strong prejudice against fresh air as an adjunct to health.” The Springhead report describes three cowsheds as follows, which ought surely to receive immediate attention,—“(1) low ceiling, hardly any light, no "ventilation, and pools of liquid manure within a few yards of the door. (2) "structurally unsafe, is dark, has no ventilation, has no channel for the "escape of liquid excreta, and has an open cesspool containing liquid human "excreta six yards from the shippon yard. (3) has very low ceiling, is quite "dark, has no ventilation, and is infested with rats, the drainage is also very

“defective.” In the Hunsworth report, one is surprised to read that although the district contains not less than 32 occupied cowsheds, the inspector’s position in the matter is much weakened by want of suitable instructions and regulations from his Authority. In the excellent report by Dr. Trotter on the Holmfirth District, he refers to the difficulty of a busy sanitary inspector efficiently supervising all the sources of milk supply, and he makes a suggestion that sooner or later independent inspectors with special knowledge (somewhat analogous to the present Factory Inspector) would be required.

Dr. Halliwell, of Dewsbury, and Dr. Banham, of Worsborough, both point out that all the precautions at the cowshed may be rendered of little avail by the consumer’s faulty method of keeping milk in shallow vessels, which, if clean to start with, are often left uncovered in the living room or kitchen where flies and dust abound.

Schools.—References to schools are very numerous in the reports and very important. Indeed no health report can be complete without such a reference seeing that about one-sixth of the population is attending school and precisely that portion of the community which is most susceptible to infectious disease. No wonder therefore that the Local Government Board in their memorandum with respect to Reports specially ask for particulars of the “action taken in relation to the health of the scholars, and for preventing the spread of infectious disease.”

During 1906 the Local Medical Officers of the West Riding made no less than 242 representations to the various Sanitary Authorities, advising them to order the closure of schools with a view to restrict or prevent the prevalence of infectious sickness. The number of schools so closed was 257, or more than one in four. The majority of the closures (156) were on account of measles, though a considerable number (34) were closed for scarlet fever and 15 for whooping cough and 15 for mumps. The duration of closure varied with circumstances from seven days to as many weeks, so that the total interference with education must have been considerable.

One cannot help feeling that in many cases the necessity for closing the schools would have been avoided by an earlier exclusion of a few scholars, but here there are two difficulties to be borne in mind, *first*, that in the case of non-notifiable diseases, it is difficult for the Medical Officer of Health to receive intimation of outbreaks at a sufficiently early stage for excluding particular scholars, and *second*, that owing to the abolition of the “Epidemic Grant” the exclusion of a scholar involves a loss of revenue, whereas complete closure does not. There is much well-grounded complaint in the reports on both of these points, and I hope the time is not far distant when a remedy will be found. Meanwhile, Medical Officers can only act to the best of their power under the Memoranda issued by the Local Government Board.

Dr. Anderson, in the Wortley Rural report, says that “the question of school infection was continually being investigated, but school closure was not resorted to in any instance as an alternative to the examination of children in school and the exclusion of ‘suspects.’ The cases occurring amongst scholars did not always outnumber those occurring amongst children under school age and amongst adults.”

Dr. Robertshaw thinks that in an Urban District like Stocksbridge school-closure for scarlet fever is of doubtful value unless there is evidence of infection at school. He adds, "in August, when the schools were closed for the summer holidays, we had almost an average number of notifications."

Dr. Iumsden, of Pateley Bridge, however, expresses the belief that "the speed with which an epidemic spreads is accentuated by confinement in a warm atmosphere, and the segregation of a number of children who are inhaling one another's breath."

Many of the Medical Officers complain that they cannot "close" a single class in a school without closing the whole school. Of course they are aware that they can exclude all the members of the class, but they hesitate to do this because of the effect it would have on the average attendance. It ought to be made known, however, that the Board of Education are prepared to regard the exclusion of an entire infant class as a closure, *i.e.*, the register of such class need not be marked, and hence no lowering of average is entailed. The effect of this is that an Infants Class is put on the same footing as an Infant Department in this respect.

With regard to the medical inspection of school-children there is a pretty unanimous feeling that something is urgently needed. The following is from Dr. Trotter's report to the Holmfirth Council :—"In my inspection of school-children during enquiries into the origin of infectious disease outbreaks, I have been struck by the number of anæmic, strumous, unhealthy scholars ; enlarged glands in the neck, tonsillar overgrowth and adenoids, and eye defects are sadly too common. Some of these children being endowed with high resisting power and tenacity of life, work out their own physical salvation, and grow up into healthy adults ; others fall victims to some acute disease, or are eliminated by the scourge of tuberculosis in adolescence ; yet others live on into adult life as examples of preventible physical deterioration ; but much waste of life and health might, I believe, be saved by a proper system for the medical inspection of school-children, followed up by the adoption of rational measures to correct remediable deficiencies."

Several complaints appear in the reports with regard to the constant and severe pressure which it is alleged is brought to bear on parents to send their children to school without omission. Cases are also mentioned where children excluded from one school as having been in contact with disease have promptly gained admission to another. The following from the Wortley Rural Report is worthy of consideration,—“There is still room for much improvement in the methods adopted of cleansing and disinfecting schoolrooms and appliances. Slates and slate pencils are still used in many schools without any attempt being made to disinfect them. Schoolroom floors are rarely scrubbed or sprinkled with disinfectants. Yet dirty floors, are, next to slates and books, the most likely agents in the dissemination of infection, the microbe-laden dust being deposited on the floors, and during school hours being again thrown into the atmosphere by the movements of the children. There seems to be no reason why the caretaker or his assistants should not sprinkle or spray a disinfectant solution on the floors every few days, nor why more frequent scrubbing of the floors should not be carried

“out.” Dr. Ewing, in the Ardsley report, points out that when the school premises are let for public entertainments “it is impossible for the caretaker “to efficiently dust and clean the schoolrooms between midnight and the time “for opening the schools.”

Sale of Food and Drugs Acts.—This subject has been dealt with at page 4 so far as concerns the work of the County Health Department, and generally. It is only necessary here to give a list of the separate Local Authorities who during 1906 submitted samples purchased by their own Sanitary Inspectors :—

| | | |
|----------------------------------|--------------------|----------------------|
| Batley B. ... 43 | Honley ... 10 | Ripon ... A few |
| Birstall ... 2 | Horsforth ... 6 | Rothwell ... 21 |
| Brighouse ... 4 | Ilkley ... 25 | Southowram ... 2 |
| Castleford ... 12 | Keighley ... 53 | Sowerby Bridge ... 8 |
| Clayton West ... 3 | Linthwaite ... 11 | Todmorden B. ... 25 |
| Denby and Cumber- worth ... 3 | Meltham ... 9 | Worsborough ... 21 |
| Elland ... 14 | Morley ... 26 | Doncaster R. ... 13 |
| Goole ... 5 | Ossett ... 4 | Hemsworth R. ... 3 |
| Harrogate ... 96 | Oxenhope ... 2 | Hunslet R. ... 5 |
| Haworth ... 6 | Penistone ... 24 | Knaresbro' R. ... 1 |
| Hebden Bridge ... 3 | Pudsey B. ... 7 | Wakefield R. ... 13 |
| Hipperholme ... 1 | Ravensthorpe ... 5 | |
| | Rawmarsh ... 7 | Total ... 493 |

The following are the four Authorities in the Riding who send samples to their own Public Analyst, viz. :—Barnsley B. 102, Dewsbury B. 60, Doncaster B. 95, Wakefield C. 128.

Slaughter Houses.—The number of recorded visits to these premises in the Administrative County rose from 5,525 in the year 1905 to 11,413 during 1906. This tremendous increase was due to public opinion being so disturbed by revelations abroad, and it is to be feared that this special zeal will fade now that the scare has subsided. It is surprising to observe, however, that nearly all the reports use the terms “clean,” “good,” “fair,” or “satisfactory,” to describe the sanitary condition of the slaughter houses visited. At Pudsey and Todmorden there are a few unsatisfactory, and at Knaresborough they are structurally bad. “Indifferent” is the word at Skipton and “bad” at Stanley.

The cry for public slaughter houses is now often heard in the more populous districts, and Sanitary Authorities must realise that only by such a system can adequate supervision be maintained. As Dr. Steele points out, the butchers all kill at the same time, and when there are 18 scattered slaughter houses, as at Morley, proper inspection is impossible. In the Kiveton Park report it is mentioned that “two butchers are said to kill sheep in barns and not in registered slaughter houses.”

Unsound Food.—Despite the increased attention there were only 16 districts where unsound food was detected and seized during 1906, and only five prosecutions occurred. The number of seizures totalled 63, including fruit, dairy produce, fish, game, and butchers' meat.

Smoke Nuisance—Observations were taken during 1906 in less than one-half of the Urban Districts, and that includes a number of districts where only two or three observations were made. In 19 districts legal notices were served on offenders, and in 12 instances these were followed by summonses, viz. :—Dewsbury 7, Harrogate 2, Sowerby Bridge 2, Todmorden 1. The following extract is from the report of Dr. W. L. Hunter, of Pudsey, (which unfortunately constitutes the last of a long series of valuable reports from his pen, he having resigned on account of ill-health):—"I do not think "that this nuisance is much different to what it was twenty years ago, and I "do not see any chance of its abatement until the law dealing with it is "administered by the County Council, or by the Police, as at present the "law is nullified by the fact that the men who break it are generally wealthy, "and therefore influential, and also that the cases summoned are tried by a "tribunal, some of the members of which are not guiltless of at times or even "regularly breaking the smoke-law themselves. It seems to me obviously "unfair that a small minority while enriching themselves, should pollute the "atmosphere at the expense, danger to health, and discomfort, of a large "majority. The spoiling of what should be a nice town, is a serious matter."

One report contains the following pregnant sentence under the head of Smoke Abatement,—“On this subject I say nothing for fear of getting my “ears boxed, but leave it to the powers that be!”

Common Lodging Houses.—These premises are described generally as ‘fairly good’ or ‘satisfactory.’ At Doncaster, where annual licensing is in vogue, it is mentioned that the licences of three houses kept by one man were withheld for one month during the year. Altogether there are 135 acknowledged common lodging houses in the Administrative County, and of these 2408 inspections were made during 1906.

Canal Boats are a sanitary (or insanitary) item in some districts having water traffic, and it is recorded that there were 1666 inspections made of boats passing through 36 districts. Infractions of regulations were dealt with at Doncaster and Mexborough, but elsewhere the condition of the boats was satisfactory.

Offensive Trades.—Premises which are scheduled for the carrying on of what are known as offensive trades number 172 in the Administrative County, and these were inspected to the extent of 1315 visits during the year. At Brighouse a tripe boiler was under notice as unsatisfactory, at Kirkburton certain premises were ordered to be limewashed, and at Skipton complaints were received regarding some tallow works which Dr. Atkinson thinks should be removed to a more eligible site. The Silsden Council are recommended to adopt a code of Bye-Laws with regard to offensive trades.

Burial Grounds.—The number of burial grounds referred to in the statistics is upwards of 600, but these figures cannot be regarded as complete. Whatever the number, it is clear that 20,000 interments annually must necessitate extensions, but experience shows that, as a rule, increased provision is only made under real stress. Necessity for extension is said to exist in the following districts, but those in italics are old-standing items :—

| | | |
|----------------------------|--------------------------------|--------------------------|
| <i>Ardsley E. & W.</i> | <i>Farsley</i> | <i>Mytholmroyd</i> |
| <i>Birstal</i> | <i>Fewston (Wharfedale R.)</i> | <i>Rawmarsh</i> |
| <i>Clayton</i> | <i>Hebden Bridge</i> | <i>Whitley Upper</i> |
| <i>Dinnington</i> | <i>Kildwick (Skipton R.)</i> | <i>Wilsden (Bingley)</i> |
| <i>Dodworth</i> | <i>Mirfield</i> | |

At Fewston the situation has been one of dire need for a number of years, and, after overcoming many obstacles in the selection of a site, the latest difficulty to present itself is a disturbance claim by the tenant occupying the land.

Meteorology.—The following Tables comprise the whole of the records given in the local Reports. Some of the writers discuss the data in detail, but it is not necessary that I should do so here. The chief features of 1906 were :—Cold Spring, warm and dry Summer, extremely hot September, wet Autumn, and early Winter :—

MEAN TEMPERATURE, in Degrees Fahrenheit :—

| | | | 1906 | 1905 | 1904 | 1903 |
|------------------|-----|-----|------|------|------|------|
| Bolton-on-Dearne | ... | | 46·4 | 44·8 | 45·5 | 46·7 |
| Brighouse | ... | ... | 46·0 | 46·0 | 46·0 | 47·2 |
| Cudworth | ... | ... | 56·0 | 52·0 | ? | ? |
| Goole | ... | ... | 47·0 | 47·2 | 49·7 | 49·3 |
| Harrogate | ... | ... | 48·1 | 47·2 | 46·8 | 46·8 |
| Hebden Bridge | ... | ... | 46·5 | 46·2 | 45·5 | 46·0 |
| Ilkley | ... | ... | 47·0 | ? | 46·5 | 47·0 |
| Mexborough | .. | ... | 52·8 | 48·8 | 47·9 | 50·3 |
| Mytholmroyd | ... | ... | 46·5 | 46·2 | 45·5 | 46·0 |
| Ossett | ... | ... | 48·3 | 48·1 | 46·7 | 48·2 |
| Pudsey | ... | ... | 47·0 | 47·0 | 46·1 | ? |
| Skipton | ... | ... | 48·4 | 48·5 | 47·2 | 47·4 |
| Swinton | ... | ... | 47·3 | ? | ? | ? |
| Wakefield | ... | ... | 48·1 | 48·7 | 48·3 | 48·6 |
| Wath-on-Dearne | ... | ... | 46·4 | 44·8 | 45·5 | 46·7 |
| Wombwell | ... | ... | 56·0 | 50·0 | 52·0 | 48·0 |
| Worsborough | ... | ... | 50·2 | 49·7 | ? | ? |
| Bowland R. | ... | ... | 46·9 | ? | 46·9 | 47·6 |
| Doncaster R. | ... | ... | 48·5 | 48·0 | 47·8 | 48·3 |
| Penistone R. | ... | ... | 44·9 | 37·0 | ? | ? |
| Settle R. | ... | ... | 46·8 | 46·1 | 46·0 | 46·5 |
| Todmorden R. | ... | ... | 47·2 | 47·1 | 46·3 | 46·3 |

ANNUAL RAINFALL, in inches.

| | | | 1906 | 1905 | 1904 | 1903 |
|----------------------|-----|-----|-------|-------|-------|-------|
| Balby-with-Hexthorpe | .. | | 24·18 | 18·69 | ? | ? |
| Barnoldswick | ... | | 44·53 | 31·85 | 37·81 | 43·36 |
| Barnsley | ... | ... | 26·22 | 21·82 | 23·64 | 33·15 |
| Batley B. | ... | ... | 23·4 | 21·29 | 21·35 | 29·22 |
| Bingley | ... | ... | 29·98 | 22·67 | 25·91 | 38·23 |
| Bolton-upon-Dearne | ... | | 23·71 | 20·48 | 22·15 | 28·34 |
| Brighouse | ... | ... | 33·00 | 25·94 | 29·30 | 44·25 |
| Cleckheaton | ... | ... | 28·48 | 22·59 | 24·11 | 34·60 |
| Cudworth | ... | ... | 18·3 | 15·63 | ? | ? |
| Doncaster | ... | ... | 24·18 | 18·69 | 21·60 | 28·71 |
| Elland | ... | ... | 37·70 | 26·62 | 25·14 | 35·89 |
| Goole | ... | ... | 24·36 | 20·80 | 22·56 | 29·50 |
| Handsworth | ... | ... | 33·89 | 29·96 | 31·26 | 39·66 |
| Harrogate | ... | ... | 30·86 | 24·20 | 30·40 | 39·50 |
| Hebden Bridge | ... | ... | 44·34 | 34·78 | 38·28 | 56·29 |
| Horsforth | ... | ... | 26·17 | 23·04 | 26·71 | 37·74 |
| Ilkley | ... | ... | 39·84 | 30·38 | 33·70 | 49·60 |
| Keighley B. | ... | ... | 37·25 | 29·36 | 31·59 | 49·75 |
| Mexborough | ... | ... | 20·44 | 17·78 | 20·39 | 24·35 |
| Mytholmroyd | ... | ... | 48·84 | 34·78 | 38·28 | 53·77 |
| New Mill | ... | ... | 51·0 | 38·0 | ? | ? |
| Ossett | ... | ... | 23·80 | 20·85 | 23·50 | 37·75 |
| Otley | ... | ... | 27·59 | 23·94 | 26·00 | 38·70 |
| Oxenhope | ... | ... | 51·94 | 42·72 | 40·88 | 68·59 |
| Penistone | .. | ... | 32·66 | ? | ? | 40·49 |
| Pudsey | ... | ... | 27·96 | 21·84 | 23·26 | ? |
| Selby | ... | ... | 20·63 | 19·04 | 19·30 | 26·60 |
| Silsden | ... | ... | 30·31 | 22·02 | 18·92 | 35·79 |
| Skipton | ... | ... | 34·57 | 25·06 | 28·03 | 43·36 |
| Swinton | ... | ... | 22·72 | 19·68 | 22·43 | 27·15 |
| Todmorden | ... | ... | 56·76 | 43·48 | 45·96 | 66·20 |
| Wakefield | ... | ... | 23·01 | 20·05 | 22·25 | 30·42 |
| Wath-on-Dearne | ... | ... | 23·71 | 20·48 | 22·15 | 28·34 |
| Wheatley | ... | ... | 24·18 | 18·69 | ? | ? |
| Wombwell | ... | ... | 19·0 | 15·63 | 17·74 | 29·60 |
| Worsborough | ... | ... | 25·0 | 21·40 | ? | ? |
| Barnsley R. | ... | ... | 26·22 | ? | 23·64 | 33·15 |
| Bowland R. | ... | ... | 47·7 | ? | 47·60 | ? |
| Doncaster R. | ... | ... | 25·37 | 18·88 | 21·79 | 31·06 |
| Keighley R. | ... | ... | 31·80 | ? | 30·05 | 48·46 |
| Kiveton Park R. | ... | ... | ? | 16·91 | 19·81 | 27·95 |
| Penistone R. | ... | ... | 29·36 | 22·86 | ? | 36·25 |
| Sedbergh R. | ... | ... | 58·73 | 44·54 | 47·64 | 70·45 |
| Settle R. | ... | ... | 47·38 | 38·51 | 37·24 | 60·28 |
| Thorne R. | ... | ... | 20·29 | 16·21 | 18·94 | 25·40 |
| Todmorden R. | ... | ... | 45·36 | 34·19 | 35·23 | 52·98 |
| Wharfedale N. | ... | ... | 30·0 | 28·15 | ? | 42·24 |
| Wortley R. | ... | ... | 25·62 | 22·15 | 23·90 | 33·50 |

SIXTH ANNUAL REPORT

ON

THE WORK OF THE BACTERIOLOGICAL LABORATORY.

January 1st to December 31st, 1906.

The number of specimens received at the laboratory during 1906 reached the grand total of 4642. The following table gives the monthly record in comparison with the previous year, showing that a notable increase took place in all branches of the work.

GENERAL SUMMARY OF THE SPECIMENS EXAMINED IN THE LABORATORY.

| | Total. | | Serum Reaction for Enteric Fever. | | Sputum for Tubercle Bacilli. | | Suspected Diphtheria. | | Miscellaneous | |
|-------------|--------|------|---|------|------------------------------------|------|--------------------------|------|---------------|------|
| | 1905 | 1906 | 1905 | 1906 | 1905 | 1906 | 1905 | 1906 | 1905 | 1906 |
| January... | 262 | 335 | 20 | 21 | 35 | 37 | 200 | 276 | 7 | 1 |
| February | 236 | 288 | 26 | 25 | 44 | 42 | 164 | 212 | 2 | 9 |
| March ... | 292 | 323 | 36 | 24 | 52 | 58 | 200 | 226 | 4 | 15 |
| April ... | 230 | 432 | 27 | 25 | 36 | 45 | 161 | 358 | 6 | 4 |
| May ... | 261 | 394 | 27 | 28 | 46 | 64 | 183 | 280 | 5 | 22 |
| June ... | 175 | 373 | 21 | 24 | 44 | 47 | 108 | 272 | 2 | 30 |
| July ... | 219 | 400 | 23 | 27 | 36 | 49 | 158 | 286 | 2 | 38 |
| August ... | 271 | 338 | 32 | 26 | 27 | 51 | 208 | 233 | 4 | 28 |
| September | 266 | 328 | 39 | 54 | 33 | 44 | 191 | 195 | 3 | 35 |
| October ... | 344 | 416 | 49 | 63 | 38 | 47 | 250 | 248 | 7 | 88 |
| November | 219 | 543 | 13 | 55 | 38 | 50 | 166 | 366 | 2 | 72 |
| December | 228 | 442 | 38 | 28 | 25 | 41 | 156 | 307 | 9 | 66 |
| Total ... | 3003 | 4642 | 351 | 400 | 454 | 575 | 2145 | 3259 | 53 | 408 |

It may be safely stated that the continuous and progressive increase in numbers is largely due to a growing appreciation of the value of the institution on the part of the medical practitioners of the Riding. Expressed in percentages the increase of 1906 upon 1905 has been as follows:—

| | | |
|---|---------|-----------|
| Specimens of Blood Serum for Typhoid reaction ... | 13·9°/o | increase. |
| „ Sputum for Tubercle Bacillus ... | 26·6°/o | „ |
| „ Exudates for Diphtheria ... | 51·9°/o | „ |
| Total Specimens ... | 54·5°/o | „ |

In the case of Diphtheria and Ringworm some of the increase is due to specimens collected directly by the staff of the department, in connection with epidemics occurring in Schools,—reference to which will be made in this report under the heading of the respective diseases.

Serum
Diagnosis
of Enteric
Fever.

During the past year 400 blood specimens have been received from cases of suspected enteric fever as compared with 351 during 1905, and with an annual average of 282 from 1902 to 1905. As the following table shews, the increase over both these periods is not due to a greater prevalence of enteric fever, for the notified cases of this disease were fewer during 1906 than in any of the four preceding years.

| | Notified cases of Enteric Fever in the Administrative County. | Number of Blood Specimens received. |
|------------------------------|---|---|
| 1902 | 1064 | 219 |
| 1903 | 1210 | 309 |
| 1904 | 1225 | 261 |
| 1905 | 1043 | 351 |
| 1906 | 955 | 400 |
| Annual average, 1902-1905 | 1135 | 282 |

An analysis of these figures shews that 24 blood specimens were sent for examination in proportion to every 100 cases of enteric fever during 1902-1905, whereas 41 specimens were sent in proportion to every 100 cases during 1906.

The final opinion of the medical attendant is compared with laboratory results in the following table:—

| Final Diagnosis ascertained after the lapse of three months. | | | Results of Serum Reaction. | | |
|---|-----|-----|----------------------------|-----------|-----------|
| | | | Positive. | Negative. | Doubtful. |
| Enteric | ... | ... | 158 | 24 | 8 |
| Not Enteric | ... | ... | 4 | 92 | 2 |
| No Return | ... | ... | 29 | 39 | 11 |
| Totals | ... | ... | 191 | 155 | 21 |

This table does not include 33 which were repetitions in cases from which specimens had previously been sent. It will be observed that a negative result was obtained in the laboratory in 24 instances where the medical practitioner finally regarded the case as one of enteric. This is accounted for in two ways. The Widal reaction may not be given by the blood at any stage of the disease in 5 to 10 per cent. of undoubted cases of enteric fever. Also, this property of the blood does not develop during the first 4 or 5 days, and not equally early in all cases, so that specimens sent during the first week especially, and in a less proportion during the next few days, may not give the reaction or may give it only in a doubtful degree. When this is the case the report is accompanied by a request for a further specimen after the lapse of a few days, when, if the disease be enteric fever, a positive reaction will be obtained in a very large majority of cases.

In four instances a positive reaction was obtained and the case was nevertheless regarded as not one of enteric. Three of these were finally diagnosed as tuberculosis of the lungs, genito-urinary tract and peritoneum respectively, while the fourth was not diagnosed but an abortive form of enteric suggested. Here again it must be borne in mind that the reaction is occasionally obtained where the disease is undoubtedly not enteric, and also that the property of giving the reaction may persist from a previous attack of enteric fever. A history suggestive of a previous attack was given in six cases. In one a positive reaction was obtained, the case not being regarded as enteric, but the length of time which had elapsed since the suggested previous attack was not stated. A positive reaction was given in one instance each where there had been a previous attack 3 years and 25 years before respectively, but as the present illness was regarded as enteric in the latter case, and the history was highly suggestive in the former, the reaction can hardly be attributed to the previous attack. A negative result was obtained from the specimens when the patient had suffered from enteric fever 14 years ago, and "many years ago" respectively. Lastly, the blood of a man who had enteric fever at the Cape six years before gave a negative result, shewing that the property of producing the reaction had not persisted for that period, and this was followed by a positive result due to his present attack. Summarising these cases, in only one could a positive reaction be attributed to a possible previous attack, and in that case there was no information as to how long ago this attack had occurred; in two, giving positive results, the reaction could be regarded as due to the present illness, while of those which gave a negative reaction the shortest interval which elapsed since the previous attack was six years.

The number of sputum specimens sent for investigation this year was 575, as compared with 454 in 1905, an increase of 26·6 per cent. on the latter year, and of 20·5 per cent. on the annual average for 1902-1905. This may be regarded as satisfactory, as a slight decrease was recorded in last year's report, and there are good reasons, as stated in that report, to account for a smaller proportion of specimens being received in connection with tuberculosis than from the more acute infectious diseases. It is not improbable also that negative reports on cases apparently undoubtedly tubercular may act as a discouragement to the practitioner. It is well recognised that the tubercle bacillus may not be detected in sputa from such, as, to give one reason only, the patient may preserve a specimen expectorated at the least favourable period of the day for examination. It should again be urged, therefore, that further specimens be sent in those cases where a negative result is reported.

The final opinion of the medical attendant is recorded in the following table, with the bacteriological results.

| Final Diagnosis ascertained after lapse of three months. | | | | Tubercle bacillus found. | Tubercle bacillus not found. |
|---|-----|-----|-----|-----------------------------|---------------------------------|
| Tuberculosis | ... | ... | ... | 139 | 50 |
| Not Tuberculosis | ... | ... | ... | — | 185 |
| No Return | ... | ... | ... | 48 | 153 |
| Total | ... | ... | ... | 187 | 388 |

Examina-
tion of
Sputum for
Tubercle
Bacilli.

Of 189 cases finally reported as being clinical cases of phthisis, the tubercle bacillus was found in the sputum in 139, or 73 per cent. Had a larger number of these specimens been repeated, as pointed out previously, there is no doubt that a higher percentage of positive results would have been obtained.

With regard to the occupations of the persons whose sputum contained tubercle bacilli, the records show that no class is exempt,—unskilled labourers, outdoor and indoor workers, tradesmen and professional men, all contribute to the list. But the incidence seems greatest among factory operatives and textile workers (26), Stoneworkers (7), Miners (7), Clerks (6), Painters (5), Shopkeepers (4), School Teachers (4).

A note has been kept of the ages of the persons from whom positive specimens were received, and in both sexes the age periods from 15 to 45 years have furnished the great majority of the cases, males from 25 to 35, and females from 25 to 45 being especially affected. The extreme ages are 16 and 63 years.

The communicability of Tubercular Phthisis is of course well established, and an analysis has again been made of all cases where the information permits, with the view of shewing in what proportion a definite association with tubercular persons is known to have existed.

FAMILY HISTORY OR ASSOCIATION WITH OTHER CASES.

| | Male. | Female. | Total. |
|-------------------------------|-------|---------|--------|
| Stated to be known | 28 | 25 | 53 |
| Stated not to be known | 64 | 35 | 99 |
| Totals | 92 | 60 | 152 |

These figures relate only to cases when the tubercle bacillus has been found in the sputum and the diagnosis therefore does not admit of doubt. They show that of 152 cases 53, or 34·8 per cent., have had tubercular relatives or friends, nearly always the former. Considering the sexes separately it appears that there has been this association in 30·4 per cent. of males and 41·6 per cent. of females, the latter sex being in closer association with the sick. It is probable that the association has not been so close as would appear above as no doubt a number of the tuberculous relatives died too long before to have been the source of infection.

The number of swabs examined for the diphtheria bacillus during 1906 was 3259, a figure which exceeds that of 1905 by 1114 and the annual average for the four years 1902 to 1905 by 1521. Of the 3259 swabs examined 325 were taken by this department during investigations into infected schools, leaving 2934 specimens sent in by private practitioners and local Medical Officers of Health.

Diphtheria
Examina-
tions.

The following table shews the number of notifications of diphtheria in the Administrative County and the number of swabs received exclusive of school investigations.

| | Notifications. | Swabs. |
|------|----------------|--------|
| 1902 | 1554 | 1486 |
| 1903 | 1382 | 1890 |
| 1904 | 1363 | 1434 |
| 1905 | 1488 | 2009 |
| 1906 | 1602 | 2934 |

An analysis of this table shews that whereas 117 swabs were sent for investigation in proportion to every 100 notified cases of diphtheria from 1902 to 1905, 183 were sent during 1906, a highly satisfactory increase in the use of the laboratory on the part of the private practitioners and local Medical Officers of Health.

It is necessary here to explain, as in previous reports, that diphtheria swabs are divided into two classes ; (1) primary, *i.e.*, all received for the first time from suspected cases, and (2) secondary, swabs repeated from the same patient. The bacillus of diphtheria is not always found the first time, and medical men are therefore advised to send a further swab for verification where the clinical appearances are very suggestive. Such a swab is classed as "secondary." Under this same heading are grouped swabs repeated, usually at weekly intervals, for the purpose of ascertaining whether the patient is yet free from infection. This "secondary" class is described in the following table as "convalescent cases."

RESULT OF BACTERIOLOGICAL EXAMINATION OF 3259 SPECIMENS
FOR DIPHTHERIA BACILLI.

| Final Diagnosis ascertained after the lapse of three months | Diphtheria Bacillus. | |
|---|----------------------|------------|
| | Found. | Not found. |
| Diphtheria 629 | 483 | 146 |
| Not Diphtheria 681 | 68 | 613 |
| No Return 702 | 241 | 461 |
| Convalescent Cases 1245 | 469 | 776 |
| Total 3257 | 1261 | 1996 |

This table shews that of 629 cases finally diagnosed by the medical attendant as diphtheria, the diphtheria bacillus was found in the first swab in 483 instances, or 76·7 per cent. This leaves 146 cases or 23·3 per cent. in which bacteriological evidence was negative, and the following analysis of this group is of some interest.

Of the 146 negative swabs 26 only were repeated, of which the bacillus was found in 16, shewing the value of sending a further swab after a negative report before deciding on the nature of the case.

As many as 66 were not sent during the acute attack but at a later convalescent stage when the bacillus might have disappeared from the throat.

In two instances antiseptics had been applied to the throat shortly before the specimen was taken.

The swab proved sterile in eight instances, suggesting possible error in the method of collection, and was not repeated.

This detailed statement illustrates fairly well various factors which operate against the detection of the bacillus, and also emphasises the importance of not regarding one negative report as necessarily decisive. This latter point is further illustrated by three cases where a negative result was obtained, and the illness was followed by paralysis confirming the diagnosis of diphtheria. In one other similar case three successive swabs failed to shew the presence of the bacillus.

Negative bacteriological reports were furnished in 613 or 90 per cent. of the 681 final diagnoses of "not diphtheria." Of the 68 cases where the bacillus was found and the case still regarded as not diphtheria—10 were merely "contacts" showing no evidence of illness. Probably in the remaining 58 the clinical signs were slight, but it is this class that bacteriological examination would appear to be of the greatest value, as it is well known that such "carrier" cases are a potent factor in the dissemination of the disease.

From the "no return" group 325 specimens taken from schools by this Department must be deducted, leaving 377 primary swabs which cannot be discussed owing to no final information having been received with regard to them.

The great majority of the "secondary" or "convalescent" swabs are received systematically from Isolation Hospitals in connection with the discharging of patients. From time to time enquiries have been received as to the length of time which the bacillus may persist in the throat, and some surprise has been expressed at its continued presence in individual cases. To elucidate this point an analysis has been made of 185 cases where the necessary data were available. The average period during which the bacillus was present as shewn by the last positive results was 24·5 days. As the bacillus disappears between this and the first negative result the mean between these two dates gives the probable persistence of the infective organism, and in these 185 cases averages 30·7 days. The longest period giving a positive result was 95 days (negative on 105th day) and the shortest was 2 days in two cases (negative on 7th day).

The persistence of the bacillus during successive week periods as shewn by the last positive results is indicated by the following table.

PERSISTENCE OF DIPHTHERIA BACILLUS IN 185 CASES.

| | | | |
|--------------------|---------|-----|----------------|
| Under 1 week | ... | ... | 11·8 per cent. |
| 1 week and under 2 | | ... | 14·6 „ |
| 2 weeks | „ | 3 | 26·5 „ |
| 3 „ | „ | 4 | 10·2 „ |
| 4 „ | „ | 5 | 15·7 „ |
| 5 „ | „ | 6 | 5·9 „ |
| 6 „ | „ | 7 | 7·0 „ |
| 7 „ | upwards | ... | 8·1 „ |

During four outbreaks of diphtheria the large proportion of cases traceable to certain schools has been the occasion of six visits from this department to four schools. The method adopted has been to examine the throats of all the children present and to take swabs either from those which present any abnormality, or, if it is thought desirable, from all the throats in the school. Occasionally, children actually suffering from diphtheria are detected in this way, but in the great majority of cases where the diphtheria bacillus is found the evidences are slight or altogether absent. These constitute the familiar “carrier” cases alluded to before in this section. The number of positive results obtained from swabs taken from all the schools under consideration was sufficiently large to justify recommending the closure either of certain departments or of the whole school. Isolation, as far as was practicable, was recommended for all children in whose throats the diphtheria bacillus was found. Such children should not return to school until a further bacteriological examination has been made.

Miscellaneous Examinations. — Under this heading specimens other than diphtheria, enteric fever and tubercle are dealt with. They are classified as follows :—

| | | | | |
|-----------------------------|-----|-----|-----|-----|
| Ringworm | ... | ... | ... | 315 |
| Anthrax | ... | ... | ... | 21 |
| Tuberculosis | ... | ... | ... | 6 |
| Urine for Tubercle Bacillus | | | ... | 12 |
| Urine for Typhoid Bacillus | | | ... | 19 |
| Water | ... | ... | ... | 17 |
| General Bacteriological | ... | | ... | 13 |
| General Pathological | ... | | ... | 5 |
| | | | | — |
| | | | | 408 |
| | | | | — |

RINGWORM—This is a new feature in the work of the laboratory, which has originated in school investigations made by this Department. Ringworm is caused by a parasite of the nature of a fungus which invades the hair and epithelial scales. If the resultant broken hairs be removed and examined microscopically the parasite is readily recognised, and to avoid all possible dispute even well marked cases are confirmed in this way. Doubtful “scurfy”

patches are frequently met with on the scalp, and the microscopic method of diagnosis decides beyond doubt the nature of such cases. Certain infected schools are systematically reinspected from this Department, and specimens taken from all excluded ringworm cases with a view to deciding as to whether the children are free from infection before readmission to school. Of the 315 specimens taken in this way 273 contained the parasite, while 42 gave negative results. During the current year the attention of private practitioners has been drawn to this branch of laboratory work, and it is hoped that the spread of ringworm in schools may be checked to some extent by this means.

ANTHRAX.—Of the 21 specimens received to be examined for the Anthrax bacillus 18 were in connection with 10 suspected human cases, and two were from animals. The remaining specimen was a culture of an organism isolated from a trade effluent and proved not to be that of Anthrax.

The particulars relating to the human and animal specimens are as follows:—

A. From animals—two specimens.

1. Cow's ear sent by a veterinary surgeon after a post-mortem. Anthrax bacillus found, but could not be cultivated as the specimen was sent in an antiseptic.

2. Spleen of pig taken by sanitary inspector from an abattoir. Anthrax bacillus not found.

B. From man—eighteen specimens.

Case 1. A wool worker, male, 21 years.

Specimen (a). Fluid from vesicles of suspected malignant pustule, taken on third day.—Anthrax bacillus found.

Specimen (b). The excised malignant pustule. About 50 paraffin sections were examined, but the bacillus was not found, having probably been destroyed by the method of treatment adopted previous to excision.

Specimen (c). A sample of wool on which the man had been working.—Bacillus not found.

Case 2. A woolshaker, male, 18 years.

Specimen (a). Excised pustule.—Anthrax bacillus found.

Specimen (b). Wool on which man had been working.—Bacillus not found.

Case 3. A woolsorter working in East Indian wool, male, 48 years, pustule on neck.

Specimen (a). Blood tubes sent on 4th day.—Anthrax bacillus not found, and specimen from pustule itself requested as the blood is not likely to contain the bacillus in cases of human malignant pustule except very occasionally in the later stages.

Specimens (b). Swab and fluid from pustule, and the excised pustule.—Anthrax bacillus found.

Case 4. A worsted spinner, had handled mohair, female, 17 years, pustule under chin.

Specimens (a). Portions of spleen, liver, brain and lung taken post-mortem.—Anthrax bacillus present in all but brain, but could not be cultivated as specimens were sent in formalin.

Specimen (b). Fur wrap worn by deceased.—Anthrax bacillus not found.

Case 5. Male—23 years—had been sheeting up old cow hair at yarn spinners two days before illness.

Specimen (a) Swab from vesicle on upper eyelid—Anthrax bacillus found, pustule excised, recovery.

Specimen (b) Similar specimen sent after admission to hospital—Anthrax bacillus found.

Case 6. Weaver, female, 32 years.

Specimen (a) Swab from pustule on forehead—Anthrax bacillus found.

Specimen (b) The excised malignant pustule—Anthrax bacillus found.

Specimen (c) Yarn upon which patient was working—Anthrax bacillus not found.

Case 7.—Woolsorter.

Specimen—coverslip preparations from suspected vesicle on jaw—Anthrax bacillus not found.

Case 8. Weaver, female.

Specimen—swab from suspected vesicles on forearm—Anthrax bacillus not found.

Case 9.—Hair sorter, male.

Specimen—Swab from pustule on hand—Anthrax bacillus not found.

Case 10.—Farmer.

Specimen—Swab from elbow—Anthrax bacillus not found.

It appears from the above that of the six cases giving positive results four had recently been working in wool, one in mohair, and one in cowhair. In all the form of Anthrax was the localised one, the malignant pustule. The four patients whose specimens gave negative results were also engaged in occupations which render the workers liable to infection, wool sorting, weaving, hair sorting, and farming, and this was no doubt the reason for suspicion having been attached to their ailment. Three of these cases eventually proved not to be suffering from Anthrax, while the specimens received from the fourth (case 7) were not suitable for examination.

TUBERCULOSIS.—In addition to sputa and urines the following six specimens were examined for the tubercle bacillus.

1. Glands from a carcase seized by a sanitary inspector.—Tubercle bacillus not found.

2. Milk (mixed supply) examined as a possible source of infection in a tubercular patient.—Tubercle bacillus not found.

3. Milk (from cow suspected of tuberculosis).—Tubercle bacillus not found.

4. Lymphatic gland (human).—Structure as seen in paraffin sections suggestive of a chronic tubercular process, but the tubercle bacillus not found.

5. Pleuritic fluid from a boy.—Tubercle bacillus not found.

6. Pus from abscess in back of a woman.—Tubercle bacillus found.

URINES FOR TUBERCLE BACILLUS.—The tubercle bacillus was found in 2 of 12 specimens examined. A final diagnosis was received with regard to 9 of these cases. Of two which were regarded clinically as tubercular the tubercle bacillus had been found in one and not detected in the other, while seven in which the bacillus was not found were considered not to be tubercular. No return was received relating to three cases, in one of which the bacillus had been found.

URINES FOR TYPHOID BACILLUS.—Final diagnoses were received from the medical attendant with regard to all 19 specimens of urine examined. The typhoid bacillus was found in 4 specimens (confirmed in two cases by the Widal blood serum test) all of which were regarded as being from cases of Enteric fever. Two cases were finally regarded as not being enteric fever, urine specimens from which were not found to contain the typhoid bacillus, and one of these opinions was confirmed by a negative Widal blood test. Thirteen cases were considered clinically to be enteric, the diagnosis being confirmed in 8 cases by the Widal test, but the typhoid bacillus was not detected in the urines. These thirteen cases should be regarded in the light of the following remarks. Typhoid urines are not usually sent for diagnostic purposes, but with the object of ascertaining whether the typhoid bacillus has yet disappeared from the urine of known cases of typhoid fever, and therefore whether a known source of infection has yet been removed. This method is seldom employed for diagnosis for several reasons, one of which is that the Widal test is much more convenient. Also the typhoid organism is only found in the urine in about one in four cases of enteric fever, and is seldom present before the third week. It is thus evident with regard to these thirteen cases that the bacillus might not be present in the urine at any stage of the disease, or the specimen might be sent too early, or it might be sent after the disappearance of the organism from the urine. As a matter of fact the number of urines which were found to contain the typhoid bacillus, viz., five out of 17 cases regarded as enteric, maintains about the average proportion of frequency of detection of the typhoid organism in urine.

WATER.—Four investigations have involved the examination of 17 water samples.

1. One sample from a pump supplying cottages in a Rural District—well 10–12 yards deep—cultivated land adjacent. Complaints of finding worms and other minute organisms in the water. Bacteriological examination afforded evidence of pollution at a recent date.

2. Eight samples sent from three localities where cases of enteric fever had occurred in an Urban District—cultivated land adjacent to each spring. Results obtained from the earlier samples were not such as to throw suspicion on the water, but the last examination shewed a marked increase in bacterial contents and change in quality, suggesting the desirability of frequent analysis.

3. One sample from a well used by 10 to 14 people occupying three cottages in Rural District. Five cases of enteric fever occurred simultaneously, preceded by a doubtful case several weeks before. Slops thrown close to well. Bacteriological examination shewed definite excretal contamination of the water.

4. Seven samples from a private school in which cases of enteric fever had occurred—water supply partly public and partly from bore on school premises. Four samples examined bacteriologically and three by microscopic examination of sediment. Private supply eventually condemned and its use for drinking purposes discontinued.

GENERAL BACTERIOLOGICAL AND PATHOLOGICAL EXAMINATIONS—Among the 18 specimens falling under this heading were the following :—

Portion of skin from a yarn scourer suffering from a septic thumb, and suspected of Tetanus. (B. Tetani not found)

Pericardial fluid from a child who had a septic scratch on the face followed by a periosteal abscess. (Staphylococci present.)

Meningeal fluid taken post-mortem from a case of meningitis. (Staphylococci found.)

Sputum from prolonged acute lung attack. (Pneumococcus found.)

Milk supplied to a private school where cases of diphtheria had occurred, no serious suspicion attached to the milk. (Diphtheria bacillus not found.)

Two specimens of dust from beneath floor grating in an elementary school. (No pathogenic organisms found.)

Charcoal from a filter in a drinking-water cistern in connection with a water investigation. (No growth indicative of pollution.)

The remaining specimens present no special features of interest.

APPENDIX TO THE BACTERIOLOGICAL REPORT.

TABLE SHOWING THE DISTRICTS FROM WHICH SPECIMENS HAVE BEEN RECEIVED DURING 1906.

| | | | | | | |
|---------------------------|--------|--|-----------------|--------|---------------------------|---------|
| <i>Urban Districts :—</i> | | | Hoylandswaine | .. 8 | Sowerby Bridge | .. 21 |
| Altofts .. | .. 8 | | Hunsworth | .. - | Soyland .. | .. 2 |
| Ardsley .. | .. - | | Ilkley .. | .. 75 | Springhead .. | .. - |
| Ardsley, East and West | 3 | | Keighley B. | .. 720 | Stainland-w-Old Lindley | 13 |
| Baildon .. | .. 2 | | Kirkburton .. | .. 2 | Stanley .. | .. 15 |
| Balby-with-Hexthorpe .. | .. - | | Kirkheaton .. | .. - | Stocksbridge | .. 10 |
| Barkisland .. | .. 1 | | Knaresborough | .. 5 | Swinton .. | .. 25 |
| Barnoldswick | .. 4 | | Knottingley | .. 21 | Thornhill .. | .. 15 |
| Barnsley B. | .. 107 | | Lepton .. | .. - | Thurlstone .. | .. 17 |
| Batley B. .. | .. 9 | | Linthwaite .. | .. - | Thurstonland | .. 2 |
| Bingley .. | .. 124 | | Liversedge .. | .. 28 | Tickhill .. | .. 3 |
| Birkenshaw | .. 1 | | Luddendenfoot | .. 1 | Todmorden B. | .. 27 |
| Birstal .. | .. 5 | | Marsden .. | .. 16 | Wakefield C. | .. 97 |
| Bolton-upon-Dearne | .. 1 | | Meltham .. | .. 1 | Wath-upon-Dearne | .. - |
| Brighouse B. | .. 71 | | Methley .. | .. - | Wheatley .. | .. - |
| Burley-in-Wharfedale | .. 13 | | Mexborough | .. 2 | Whitley Upper | .. 2 |
| Calverley .. | .. 1 | | Midgley .. | .. 4 | Whitwood .. | .. 7 |
| Castleford .. | .. 15 | | Mirfield .. | .. 44 | Wombwell .. | .. 5 |
| Clayton .. | .. 1 | | Monk Bretton | .. 8 | Worsbrough | .. 3 |
| Clayton West | .. 3 | | Morley B. .. | .. 5 | Yeadon .. | .. 1 |
| Cleckheaton | .. 67 | | Mytholmroyd | .. 13 | | |
| Cudworth .. | .. - | | Netherthong | .. - | <i>Rural Districts :—</i> | |
| Darfield .. | .. 1 | | New Mill .. | .. 3 | Barnsley .. | .. 1 |
| Darton .. | .. 11 | | Normanton .. | .. 4 | Bishopthorpe | .. - |
| Denby-and-Cumberworth | 2 | | Oakworth .. | .. 4 | Bowland .. | .. 1 |
| Denholme .. | .. 1 | | Ossett B. .. | .. 22 | Doncaster .. | .. 106 |
| Dewsbury B. | .. 73 | | Otley .. | .. 20 | Goole .. | .. 16 |
| Dodworth .. | .. 3 | | Oxenhope .. | .. 5 | Gt. Ouseburn | .. 45 |
| Doncaster B. | .. 75 | | Penistone .. | .. 18 | Halifax .. | .. 1 |
| Drighlington | .. - | | Pontefract B. | .. 6 | Hemsworth | .. 122 |
| Elland .. | .. 4 | | Pudsey B. .. | .. 9 | Hunslet .. | .. - |
| Emley .. | .. 3 | | Queensbury | .. 49 | Keighley .. | .. - |
| Farnley Tyas | .. - | | Ravensthorpe | .. - | Kiveton Park | .. 4 |
| Farsley .. | .. 1 | | Rawdon .. | .. 6 | Knaresborough | .. 25 |
| Featherstone | .. 25 | | Rawmarsh .. | .. 15 | Leeds (Roundhay and | |
| Flockton .. | .. 4 | | Ripon C. .. | .. 15 | Seacroft) .. | .. 3 |
| Gildersome .. | .. - | | Rishworth .. | .. 11 | Pateley Bridge | .. - |
| Golcar .. | .. 9 | | Rothwell .. | .. 7 | Penistone .. | .. - |
| Gomersal .. | .. 1 | | Roystone .. | .. - | Pontefract .. | .. 11 |
| Goole .. | .. 512 | | Saddleworth | .. 11 | Ripon .. | .. 6 |
| Greasbrough | .. - | | Sandal Magna | .. 1 | Rotherham .. | .. 24 |
| Greetland .. | .. 1 | | Scammonden | .. - | Sedbergh .. | .. 5 |
| Guisley .. | .. - | | Selby .. | .. 46 | Selby .. | .. 32 |
| Gunthwaite-&-Ingbirchw. | .. - | | Shelf .. | .. - | Settle .. | .. 130 |
| Handsworth | .. 37 | | Shelley .. | .. 3 | Skipton .. | .. 61 |
| Harrogate B. | .. 28 | | Shepley .. | .. - | Tadcaster .. | .. 45 |
| Haworth .. | .. 8 | | Shipley .. | .. 8 | Thorne .. | .. 5 |
| Hebden Bridge | .. 28 | | Silsden .. | .. 2 | Todmorden .. | .. 2 |
| Heckmondwike | .. 2 | | Skelmanthorpe | .. 4 | Wakefield .. | .. 3 |
| Hipperholme | .. 172 | | Skipton .. | .. 202 | Wetherby .. | .. 94 |
| Holme .. | .. - | | Slaithwaite .. | .. - | Wharfedale .. | .. 243 |
| Holmfirth .. | .. 4 | | Soothill Nether | .. - | Wortley .. | .. 36 |
| Honley .. | .. 4 | | Soothill Upper | .. - | <i>Asylums, etc.</i> | .. 392 |
| Horbury .. | .. 35 | | South Crosland | .. 9 | | |
| Horsforth .. | .. 41 | | Southowiam | .. 1 | Total .. | .. 4642 |
| Hoyland Nether | .. 1 | | Sewerby .. | .. 8 | | |

PART IV.

STATISTICAL ADDENDUM.

Money borrowed by Local Sanitary Authorities.—

The total amount of the loans for various purposes sanctioned in recent years by the Local Government Board, on the application of Local Authorities within the Administrative County is shown in the following table :—

Loans sanctioned, 1888-1905.

| YEAR. | PURPOSE. | | | | Total Loans Sanctioned. |
|-------|-------------------------------------|---------|-----------|---------|-------------------------------|
| | Sewerage and Sewage Disposal. | Water. | Hospital. | Other. | |
| | £ | £ | £ | £ | £ |
| 1888 | 14,110 | 9,130 | 5,500 | 90,434 | 119,174 |
| 1889 | 25,933 | 53,479 | — | 71,968 | 151,380 |
| 1890 | 9,969 | 57,030 | 8,500 | 24,505 | 100,004 |
| 1891 | 64,035 | 63,205 | 8,300 | 88,518 | 224,058 |
| 1892 | 77,323 | 16,180 | 2,005 | 118,856 | 214,364 |
| 1893 | 101,143 | 27,250 | 9,150 | 140,639 | 278,182 |
| 1894 | 202,839 | 56,328 | 30,386 | 117,306 | 406,859 |
| 1895 | 289,370 | 81,176 | 11,635 | 255,110 | 637,291 |
| 1896 | 168,706 | 12,501 | 250 | 107,965 | 289,422 |
| 1897 | 147,400 | 18,432 | 12,420 | 149,122 | 327,374 |
| 1898 | 170,074 | 18,278 | 28,460 | 262,252 | 479,064 |
| 1899 | 192,654 | 43,760 | 16,990 | 183,281 | 436,685 |
| 1900 | 267,314 | 54,049 | 8,889 | 93,003 | 423,255 |
| 1901 | 177,759 | 17,150 | 27,097 | 309,616 | 531,622 |
| 1902 | 183,905 | 178,685 | 14,715 | 187,704 | 565,009 |
| 1903 | 178,442 | 66,361 | 9,246 | 159,365 | 413,414 |
| 1904 | 238,050 | 60,649 | 6,800 | 154,519 | 460,018 |
| 1905 | 92,923 | 10,787 | 6,676 | 88,447 | 198,833 |

The next Table shows the individual loans which have been sanctioned to Sanitary Authorities in the West Riding during the year 1905.

Loans sanctioned during 1905.

| I.—Urban Districts. | | Purpose. | Years | Amount. |
|---------------------|-----|---------------------------------|-------|---------|
| | | | | £ |
| Ardsley | ... | Sewerage and sewage disposal | 10 | 550 |
| Barnsley | ... | Market purposes | 20 | 905 |
| Batley | ... | Purposes of a Refuse Destructor | 19 | 753 |
| Bingley | ... | Street improvement | 20 | 110 |

| I.—Urban Districts. | | Purpose. | Years | Amount. |
|----------------------|-----|---|-------|---------|
| | | | | £ |
| Birkenshaw | ... | Purposes of Public Offices | 15 | 150 |
| Brighouse | ... | † Street improvement | 37 | 7781 |
| " | ... | Widening of Calder Bridge | 31 | 2250 |
| Burley-in-Wharfedale | ... | Public Offices | 44 | 2310 |
| Castleford | ... | Land for sewage disposal | 60 | 1166 |
| Clayton | ... | Land for disposal of refuse | 50 | 544 |
| Cleckheaton | ... | Street improvement | 20 | 365 |
| " | ... | Depôt purposes | 20 | 220 |
| " | ... | Sewerage | 30 | 750 |
| Cudworth | ... | Water supply | 17 | 356 |
| Dewsbury | ... | Street improvement | 60 | 783 |
| " | ... | " | 20 | 467 |
| " | ... | Public walks and pleasure grounds | 25 | 100 |
| " | ... | Land for public walks and pleasure grounds | 60 | 150 |
| Doncaster | ... | Street improvement | 45 | 2000 |
| " | ... | Paying off loan | 20 | 1000 |
| Drighlington | .. | Sewerage and sewage disposal | 30 | 1000 |
| " | ... | " | 30 | 2114 |
| Goole | ... | Gasworks purposes | 30 | 700 |
| Greetland | ... | Sewage disposal | 30 | 3564 |
| " | ... | " | 15 | 400 |
| Handsworth | ... | Sewerage | 15 | 3430 |
| Haworth | ... | Gas undertaking | 23 | 3975 |
| Honley | ... | Gas undertaking | 25 | 5500 |
| " | ... | " | 10 | 1500 |
| Hunsworth | ... | Water supply | 30 | 320 |
| Ilkley | ... | Refuse destructor | 27 | 2300 |
| " | ... | Town Hall and public offices | 30 | 10000 |
| " | ... | Public walks and pleasure grounds | 10 | 420 |
| Keighley | ... | Street improvement | 24 | 8992 |
| " | ... | Sewerage | 30 | 2203 |
| Knaresborough | .. | Recreation ground | 60 | 648 |
| " | ... | " | 1 | 545 |
| " | ... | Depôt purposes | 30 | 823 |
| " | ... | Land for Depot purposes | 60 | 124 |
| " | ... | Gasworks purposes | 21 | 1350 |
| Knottingley | ... | Sewerage and sewage disposal | 30 | 969 |
| Liversedge | ... | Land for sewage disposal | 60 | 3800 |
| Mirfield | ... | Street improvement | 20 | 2178 |
| " | ... | Land for street improvement | 60 | 352 |
| Morley | ... | Purposes of an infectious diseases hospital | 21 | 1058 |

| I.—Urban Districts. | | Purpose. | Years | Amount. |
|---------------------|-----|--|-------|---------|
| | | | | £ |
| Morley | ... | Sewerage and sewage disposal | 28 | 17847 |
| " | ... | Purposes of a refuse destructor | 20 | 1928 |
| Ossett | ... | Street improvement | 20 | 350 |
| Otley | ... | Steam road roller and scarifier | 10 | 395 |
| " | ... | Street improvement | 26 | 700 |
| Pontefract | ... | Land for street improvement | 60 | 84 |
| Pudsey | ... | Street improvement | 14 | 191 |
| " | ... | Land for street improvement | 60 | 2009 |
| Queensbury | ... | Street improvement | 20 | 445 |
| " | ... | Sewerage | 30 | 465 |
| Ripon | ... | Street improvement | 59 | 6219 |
| Rothwell | ... | Purposes of the Rothwell Gas Order, 1900 | 25 | 1800 |
| " | ... | Water supply | 30 | 3626 |
| Royston | ... | Sewage disposal | 40 | 200 |
| Shelf | ... | Land for sewage disposal | 60 | 1650 |
| " | ... | Sewerage and sewage disposal | 30 | 4250 |
| Shepley | ... | Sewerage | 30 | 1000 |
| Shipley | ... | Land for Electricity supply undertaking | 60 | 2787 |
| " | ... | Land for purposes of the Public Health Act, 1875 | 4 | 614 |
| " | ... | Public offices | 25 | 800 |
| " | ... | Sewage and refuse disposal | 44 | 1040 |
| " | ... | Street improvement | 39 | 950 |
| " | ... | Land for street improvement | 5 | 600 |
| Soothill Nether | ... | Land for street improvement | 60 | 100 |
| " | ... | Open space | 60 | 100 |
| Wakefield | ... | Street improvement | 45 | 4348 |
| " | ... | " | 36 | 1700 |
| Worsborough | ... | Public lighting | 10 | 400 |
| Yeadon | ... | Street improvement | 20 | 818 |
| " | ... | Land for street improvement | 60 | 150 |
| " | ... | Depôt purposes | 28 | 252 |
| " | ... | Land for depôt purposes | 60 | 230 |

| II.—Rural Districts and Contributory Places. | | Purpose. | Years | Amount. |
|--|-----|------------------------------|-------|---------|
| | | | | £ |
| Doncaster (<i>Askern</i>) | ... | Sewerage and sewage disposal | 30 | 3430 |
| " (<i>Conisbrough</i>) | ... | " | 30 | 2651 |
| " (<i>Denaby</i>) | ... | " | 30 | 849 |
| " (<i>Bentley-with-Arksey</i>) | ... | " | 30 | 11500 |

| II.—Rural Districts, and Contributory Places. | Purpose. | Years | Amount. |
|--|------------------------------|-------|---------|
| | | | £ |
| Great Ouseburn (<i>Acomb</i>) ... | Sewerage and sewage disposal | 30 | 258 |
| Halifax (<i>Clifton</i>) ... | Water supply | 30 | 475 |
| Hemsworth (<i>Hemsworth</i>) ... | Sewerage and sewage disposal | 24 | 1290 |
| „ (<i>Ackworth</i>) ... | Sewerage | 30 | 110 |
| „ (<i>Shafton</i>) ... | Water supply | 30 | 250 |
| „ (<i>Ryhill</i>) ... | Sewage disposal | 25 | 1080 |
| „ (<i>Hemsworth</i>) ... | Private street improvement | 2 | 1182 |
| „ (<i>Ryhill</i>) ... | Sewage disposal | 25 | 320 |
| „ (<i>Harercroft</i>) ... | Sewerage and sewage disposal | 30 | 2710 |
| Knaresborough (<i>Knaresboro'</i> <i>Outer</i>) ... | Sewerage | 30 | 225 |
| „ (<i>Follifoot</i>)... | Water supply | 30 | 1100 |
| Pontefract (<i>Carleton</i>) ... | Sewerage and sewage disposal | 25 | 85 |
| „ (<i>Ferry Frystone</i>) ... | „ | 27 | 1500 |
| „ „ ... | Water supply | 15 | 250 |
| Ripon (<i>Grewelthorpe</i>) ... | Sewerage and sewage disposal | 30 | 340 |
| Rotherham (<i>Aston-cum-</i> <i>Aughton</i>) ... | „ | 28 | 371 |
| Settle (<i>Giggleswick</i>) ... | Land for sewage disposal | 60 | 302 |
| „ (<i>Langcliffe</i>) ... | „ | 60 | 237 |
| „ (<i>Settle</i>) ... | „ | 60 | 1061 |
| „ (<i>Bentham</i>) ... | Water supply | 30 | 3350 |
| „ (<i>Austrick</i>) ... | „ | 30 | 400 |
| „ (<i>Giggleswick</i>) ... | Sewerage and sewage disposal | 30 | 898 |
| „ (<i>Langcliffe</i>) ... | „ | 30 | 703 |
| „ (<i>Settle</i>) ... | „ | 30 | 3151 |
| Skipton (<i>Grassington</i>) ... | „ | 35 | 3700 |
| „ (<i>Salterforth</i>) ... | „ | 30 | 254 |
| „ (<i>Thornton</i>) ... | Sewage disposal | 28 | 5000 |
| Tadcaster (<i>Allerton</i> <i>Bywater</i>) ... | Sewerage and sewage disposal | 30 | 4100 |
| „ (<i>Barwick-in-Elmet</i>) ... | Water supply | 30 | 660 |
| „ (<i>Allerton Bywater</i>) ... | Sewerage and sewage disposal | 30 | 400 |

| III.—Joint Boards. | Purpose. | Years | Amount. |
|--|------------------------------|-------|---------|
| | | | £ |
| Keighley and Bingley Joint Hospital Board ... | Hospital purposes | 27 | 1600 |
| Luddendenfoot Joint Sewer- age Board ... | Sewerage and sewage disposal | 30 | 1473 |
| Thornton Joint Hospital Board ... | Hospital purposes | 26 | 2545 |

Provisional Orders granted and confirmed during 1905,
under the Public Health Act, 1875.

| District. | Object. |
|------------------------------|--|
| Horsforth Urban District ... | Altering the Horsforth Urban District Council Waterworks Act, 1899 |
| Keighley Borough ... | Altering the Keighley Waterworks and Improvement Act, 1872 |
| Ossett Borough ... | Altering the Ossett-cum-Gawthorpe Local Board Act, 1875 |
| Swinton Urban District ... | Altering the Swinton Local Board Act, 1894 |

Urban Powers conferred on Rural District Councils
during 1905.

| Rural Sanitary Authority. | Section of Public Health Act. | Contributory Places affected. |
|---------------------------|--|-------------------------------|
| Halifax ... | Public Health Acts Amendment Act, 1890, Sections 16 and 17 | Clifton |
| Hemsworth ... | Such of the provisions of Section 171 as incorporate the provisions of Sections 30 and 31 of the Town Police Clauses Act, 1847, with respect to fires | The whole district |
| Hunslet ... | Section 154, so far as may be necessary to enable the Rural District Council to purchase premises for the purpose of widening and otherwise improving certain streets | Oulton-with-Woodlesford |
| Kiveton Park.. | Section 154, so far as may be necessary to enable the Rural District Council to purchase premises for the purpose of widening and otherwise improving a certain street | The whole district |

| Rural Sanitary Authority. | Section of Public Health Act. | Contributory Places affected. |
|---------------------------|---|--|
| Rotherham ... | Section 169, second and third paragraphs and Section 170 Public Health Acts Amendment Act, 1890, Sections 29, 30 and 31 | The contributory places of Dinnington, Harthill and Woodhall, North and South Anston, Saint John's-with-Throapham, and Wales |
| | Section 39 ... | The contributory place of Brinsworth |
| | Section 154, so far as may be necessary to enable the Rural District Council to purchase premises for the purpose of widening and otherwise improving certain streets, Section 171, as to fires | The whole district |
| Skipton ... | Private Street Works Act, 1892, except as to sewerage | The contributory places of Anston-cum-Aughton, Brinsworth, Catchiffe and Tinsley so far as regards certain streets and parts of streets |
| | Section 160 | Those contributory places in which the provisions are not already in force |
| | Public Health (Buildings in Streets) Act, 1888, Section 3 | Those contributory places in which the provisions of Section 160 of the Public Health Act, 1875, are already partly in force |
| | Section 160, so much as is not already in force | |
| Tadcaster ... | Section 169, second and third paragraphs, and Section 170 | The contributory places of Bolton Abbey, Buckden, Elslack, Hebden, Kettlewell-with-Starbottom, Martons Both, Thorlby-with-Stirton, and Threshfield |
| | Section 150, except as to sewerage | The contributory place of Thornton so far as regards part of a certain street |
| | Public Health Acts Amendment Act, 1890, Section 41 | |
| Tadcaster ... | Private Street Works Act, 1892, except as to sewerage | The contributory places of Garforth and Barwick-in-Elmet, so far as regards certain streets |

| Rural Sanitary Authority. | Section of Public Health Act. | Contributory Places affected. |
|---------------------------|--|-----------------------------------|
| Wharfedale ... | Sections 157 and 158 Public Health Acts Amendment Act, 1890, Sections 23, so much as is not already in force, Sections 25 and 33 | The contributory place of Askwith |
| Wortley ... | Section 154, so far as may be necessary to enable the Rural District Council to purchase premises for the purpose of widening, opening, enlarging, or otherwise improving any street | The whole district |

Bye-laws confirmed during 1905.

| Subject. | West Riding Sanitary Authorities adopting same. |
|------------------------------|---|
| Cemeteries and Mortuaries... | Cleckheaton |
| Lodging Houses ... | Clayton West, Wetherby R. |
| Nuisances ... | „ „ |
| Offensive Trades ... | Haworth, Oxenhope |
| Scavenging ... | Clayton West, Wetherby R. |
| Pleasure Grounds, &c. ... | Darfield |
| Slaughter Houses ... | Rawmarsh, Rotherham R., Wetherby R. |
| Streets and Buildings ... | Clayton West, Otley, Pudsey, Wetherby R. |

DAIRIES, COWSHEDS, AND MILKSHOPS.—The following Authorities in the West Riding framed Regulations under the above Orders and deposited copies with the Local Government Board during 1905 :—

Mytholmroyd, Goole R., Wetherby R.

No. I. Births, Deaths, Annual Rates, etc., 1906.

| SANITARY DISTRICT. | AREA (Acres) | POPULATION 1906. | BIRTHS. | | | DEATHS (Nett). | | | TOTAL DEATHS Registered in District. | DEATHS (Nett) AT SUBJUGER AGES. | | | | | | ANNUAL RATES per thousand of Estimated Population. | | | | | Infant Mortality (Deaths under 1 year per 1,000 Births) | | |
|------------------------------|--------------|------------------|---------|--------------|-------|----------------|--------------|-------|--------------------------------------|---------------------------------|----------------|-----------------|-----------------|----------------|------------|--|--------------|---------------|------------|------------------|---|-----|--|
| | | | Males | Fe- males | Total | Males | Fe- males | Total | | Under 1 Year | 5 and under 15 | 15 and under 25 | 25 and under 65 | 65 and upwards | Birth Rate | Death Rate | Z-Mouth Rate | Phthisis Rate | Death Rate | Respiratory Rate | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| I. URBAN. | | | | | | | | | | | | | | | | | | | | | | | |
| Altofts | 1838 | 4152 | 75 | 74 | 149 | 41 | 24 | 65 | 63 | 19 | 15 | 2 | 2 | 15 | 35.9 | 15.7 | 3.6 | 0.2 | 3.1 | 3.1 | 127 | | |
| Ardsley | 1335 | 7247 | 123 | 122 | 245 | 41 | 33 | 74 | 103 | 35 | 3 | 2 | 2 | 11 | 33.8 | 10.2 | 1.1 | 0.8 | 1.7 | 1.7 | 143 | | |
| Ardsley, East and West | 4017 | 8100 | 138 | 127 | 265 | 47 | 48 | 95 | 92 | 24 | 15 | 4 | 1 | 21 | 18.1 | 11.7 | 1.7 | 1.1 | 0.9 | 0.9 | 91 | | |
| Baildon | 2607 | 8803 | 49 | 59 | 105 | 41 | 42 | 83 | 79 | 7 | 10 | 3 | 6 | 21 | 36 | 18.1 | 14.3 | 1.0 | 0.9 | 2.2 | 2.2 | 67 | |
| Baby-w-Heathorpe | 1615 | 8645 | 138 | 144 | 282 | 50 | 43 | 93 | 167 | 33 | 13 | 1 | 22 | 23 | 32.6 | 10.8 | 1.0 | 0.3 | 1.3 | 1.3 | 117 | | |
| Barkisland | 2424 | 1676 | 14 | 15 | 29 | 12 | 14 | 26 | 22 | 4 | — | 1 | 1 | 13 | 7 | 17.3 | 15.5 | 0.6 | 1.2 | 1.8 | 138 | | |
| Barnoldswick | 2130 | 8004 | 122 | 88 | 210 | 43 | 47 | 90 | 87 | 30 | 14 | 4 | 5 | 23 | 14 | 20.2 | 11.2 | 0.9 | 0.2 | 1.9 | 143 | | |
| Barnsley Borough | 2385 | 44405 | 790 | 777 | 1567 | 442 | 392 | 834 | 886 | 270 | 121 | 34 | 28 | 147 | 35.3 | 18.8 | 3.6 | 1.0 | 3.0 | 3.0 | 172 | | |
| Batley Borough | 2039 | 31197 | 436 | 413 | 849 | 259 | 271 | 530 | 592 | 155 | 62 | 21 | 11 | 178 | 27.2 | 17.0 | 3.5 | 0.8 | 2.9 | 2.9 | 182 | | |
| Bingley | 11677 | 19026 | 188 | 171 | 359 | 142 | 143 | 285 | 272 | 48 | 38 | 18 | 15 | 93 | 18.9 | 15.0 | 2.0 | 1.4 | 2.3 | 2.3 | 134 | | |
| Birkenshaw | 922 | 1095 | 35 | 26 | 61 | 14 | 20 | 34 | 32 | 10 | 2 | 1 | 2 | 7 | 12 | 30.6 | 17.0 | 4.0 | 0.5 | 3.8 | 104 | | |
| Birstall | 1235 | 6573 | 86 | 69 | 155 | 60 | 63 | 123 | 115 | 48 | 23 | 4 | 5 | 11 | 30.9 | 14.5 | 2.7 | 0.5 | 3.8 | 3.8 | 135 | | |
| Bolton-on-Deane | 2325 | 7020 | 118 | 141 | 259 | 44 | 58 | 102 | 99 | 48 | 23 | 4 | 1 | 82 | 20.6 | 14.4 | 1.3 | 1.2 | 2.8 | 2.8 | 141 | | |
| Brighouse Borough | 2231 | 22318 | 230 | 230 | 460 | 171 | 151 | 322 | 202 | 65 | 31 | 16 | 12 | 116 | 37.1 | 13.2 | 1.1 | 0.3 | 0.8 | 0.8 | 43 | | |
| Burley-in-Wharfedale | 3136 | 3712 | 39 | 31 | 70 | 19 | 21 | 40 | 64 | 3 | 5 | 1 | 1 | 6 | 18.9 | 10.2 | 10.1 | 0.7 | 1.1 | 1.1 | 113 | | |
| Calverley | 2106 | 2762 | 27 | 26 | 53 | 14 | 14 | 28 | 33 | 6 | 3 | — | — | 3 | 3.6 | 3.7 | 2.8 | 1.1 | 2.9 | 2.9 | 152 | | |
| Castleford | 564 | 19370 | 346 | 371 | 717 | 145 | 147 | 292 | 285 | 109 | 56 | 9 | 13 | 63 | 42 | 37.0 | 15.1 | 2.8 | 1.1 | 2.9 | 152 | | |
| Clayton | 1462 | 5350 | 48 | 38 | 86 | 26 | 29 | 55 | 141 | 7 | 2 | — | — | 3 | 10.1 | 10.3 | 0.6 | 0.2 | 0.9 | 0.9 | 81 | | |
| Clayton West | 1142 | 1355 | 26 | 24 | 50 | 10 | 16 | 26 | 26 | 2 | 2 | 2 | 1 | 7 | 32.2 | 10.7 | 1.9 | 1.3 | 3.2 | 3.2 | 40 | | |
| Cleckheaton | 1756 | 12995 | 142 | 118 | 260 | 93 | 111 | 204 | 214 | 34 | 35 | 22 | 10 | 53 | 20.1 | 15.8 | 4.5 | 0.5 | 1.9 | 1.9 | 131 | | |
| Cudworth | 1746 | 5073 | 115 | 104 | 219 | 31 | 37 | 71 | 64 | 27 | 14 | 6 | 4 | 6 | 43.2 | 14.0 | 3.2 | 1.1 | 1.7 | 1.7 | 104 | | |
| Darfield | 2018 | 4671 | 100 | 79 | 182 | 37 | 33 | 70 | 61 | 24 | 6 | 3 | 7 | 24 | 20.2 | 13.0 | 1.0 | 0.7 | 1.0 | 1.0 | 96 | | |
| Darton | 4361 | 8039 | 146 | 152 | 298 | 50 | 56 | 106 | 98 | 42 | 9 | 4 | 11 | 14 | 26 | 37.1 | 13.2 | 1.9 | 0.5 | 1.9 | 141 | | |
| Denby-and-Cumbarworth | 4302 | 3350 | 45 | 37 | 82 | 28 | 28 | 56 | 56 | 10 | 3 | — | — | 19 | 24.5 | 10.7 | 1.3 | 1.5 | 2.4 | 2.4 | 122 | | |
| Denholme | 2336 | 2723 | 33 | 31 | 64 | 17 | 22 | 39 | 39 | 7 | 3 | — | — | 10 | 23.5 | 14.3 | 1.1 | 2.6 | 2.2 | 2.2 | 100 | | |
| Dewsbury Borough | 1471 | 27150 | 309 | 330 | 639 | 252 | 245 | 497 | 580 | 109 | 63 | 14 | 28 | 175 | 23.5 | 18.3 | 2.4 | 1.7 | 3.1 | 3.1 | 179 | | |
| Dodworth | 1917 | 2978 | 57 | 51 | 108 | 31 | 24 | 55 | 51 | 17 | 10 | 3 | 7 | 8 | 39.3 | 18.5 | 4.4 | 1.3 | 2.0 | 2.0 | 137 | | |
| Doncaster Borough | 1665 | 30630 | 387 | 355 | 742 | 242 | 223 | 465 | 434 | 122 | 44 | 7 | 14 | 148 | 24.2 | 15.2 | 2.3 | 1.0 | 1.5 | 1.5 | 104 | | |
| Drighlington | 1135 | 4164 | 45 | 39 | 84 | 24 | 30 | 54 | 52 | 11 | 9 | 3 | 1 | 17 | 20.2 | 13.0 | 1.0 | 0.7 | 1.0 | 1.0 | 131 | | |
| Elland | 1994 | 10640 | 120 | 110 | 230 | 76 | 78 | 154 | 144 | 22 | 14 | 6 | 9 | 55 | 21.6 | 14.5 | 1.3 | 1.5 | 2.0 | 2.0 | 96 | | |
| Emley | 3556 | 1441 | 23 | 19 | 42 | 8 | 10 | 18 | 18 | 4 | 2 | — | — | 6 | 29.1 | 12.3 | 0.7 | 1.4 | 4.2 | 4.2 | 95 | | |
| Farnley Tyas | 1784 | 433 | 6 | 9 | 15 | — | 6 | 6 | 6 | 1 | — | — | — | 1 | 3 | 34.6 | 13.9 | 0.4 | 0.7 | 0.7 | 67 | | |
| Farsley | 820 | 5715 | 59 | 58 | 117 | 32 | 42 | 74 | 70 | 20 | 2 | 2 | 3 | 5 | 26 | 20.5 | 12.9 | 0.9 | 0.5 | 2.4 | 2.4 | 171 | |
| Featherstone | 4431 | 13812 | 277 | 293 | 570 | 106 | 109 | 215 | 215 | 85 | 46 | 8 | 6 | 49 | 41.3 | 15.6 | 3.0 | 0.9 | 4.2 | 4.2 | 149 | | |
| Flockton | 1108 | 1271 | 18 | 23 | 41 | 11 | 10 | 21 | 22 | 4 | 2 | 1 | 2 | 4 | 32.3 | 16.5 | 1.6 | 3.9 | 1.6 | 1.6 | 98 | | |
| Gildersome | 992 | 3020 | 36 | 28 | 64 | 19 | 27 | 46 | 39 | 2 | 3 | 1 | 4 | 14 | 22 | 21.2 | 17.3 | 1.7 | 1.3 | 1.0 | 31 | | |
| Golear | 1593 | 9340 | 113 | 109 | 222 | 86 | 65 | 151 | 148 | 26 | 12 | 5 | 9 | 56 | 43 | 23.8 | 16.2 | 1.4 | 1.4 | 2.5 | 117 | | |
| Gomersal | 1099 | 3412 | 58 | 34 | 92 | 32 | 23 | 55 | 48 | 9 | 3 | 1 | 2 | 20 | 27.0 | 16.1 | 1.2 | 0.9 | 2.9 | 2.9 | 98 | | |
| Goole | 1263 | 17800 | 341 | 319 | 660 | 160 | 140 | 300 | 308 | 98 | 29 | 18 | 12 | 80 | 37.1 | 16.9 | 3.1 | 1.0 | 2.1 | 2.1 | 148 | | |
| Greasbrough | 2413 | 3087 | 51 | 52 | 103 | 24 | 18 | 42 | 38 | 7 | 6 | 3 | 4 | 11 | 33.4 | 13.6 | 1.9 | 0.7 | 2.9 | 2.9 | 68 | | |
| Greetland | 628 | 4574 | 46 | 4 | | | | | | | | | | | | | | | | | | | |

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[illegible]

No. III. Notified Cases of Infectious Disease, 1906.

| SANITARY DISTRICT. | | CASES NOTIFIED OR OTHERWISE ASCERTAINED. | | | | | | | | | | CASES REMOVED TO HOSPITAL. | | | | | | | | | | MEDICAL OFFICER OF HEALTH | | | | | | | | | | | | | | | | | | |
|--------------------|--|--|---------|------------|------------------|------------|---------|--------|---------|-----------|-----------|----------------------------|--------|---------------|----------------|-----------|------------|---------------|---------------|-------|--|--|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|--|
| | | FEVERS. | | | | | | | | | | Other | | | | | | | | | | (Those whose names are printed in italics have ceased to hold Office.) | | | | | | | | | | | | | | | | | | |
| | | Small Pox | Cholera | Diphtheria | Membranous Croup | Erysipelas | Scarlet | Typhus | Enteric | Relapsing | Continued | Puerperal | Plague | Miscellaneous | Whooping Cough | Small Pox | Diphtheria | Scarlet Fever | Enteric Fever | Other | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
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